02/13/2007

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET- SUITE 200
DENVER, CO 80202-2466
Phone 800-227-8917
http://www.epa.gov/region08

Ref: 8ENF-RC

February 13, 2007

Mr. Jon Nickel
ASARCO East Helena Plant
100 Smelter Road
P.O. Box 1230
East Helena, MT 59635

RE: ASARCO East Helena Smelter Construction Completion Report for the Former Acid Plant Sediment Drying Area Slurry Wall January 2007

Dear Mr. Nickel:

We have reviewed the Construction Completion Report for the Former Acid Plant Sediment Drying (APSD) Area. You supplemented this document with the Geo-Solutions Soil-Bentonite Permeability and Compatibility Testing Report, January 23, 2007, and your email from Greg Bryce, Hydrometrics, February 6, 2007, which provided a status summary for the monitoring wells at the former APSD area. Based on our review of this report and the additional submittals, we approve the Construction Completion Report. If you have questions on this letter or any related matter, please contact me directly at (303) 312-6503.

Sincerely,

Linda Jacobson
EPA Project Manager

cc: Denise Kirkpatrick, MDEQ

Construction Completion Report

Former Acid Plant Sediment Drying Area Slurry Wall

ASARCO Smelter Facility East Helena, MT

Shaw E&I Project No.123157

January 2007

Shaw™ Shaw E & I

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS

API	American Petroleum Institute
bgs	below ground surface
CAMU	Corrective Action Management Unit
cm/sec	centimeters per second
CY	cubic yard
EPA	U.S. Environmental Protection Agency
HASP	Health and Safety Plan
pcf	pounds per cubic foot
QC	quality control
SB	soil-bentonite
SCB	soil-cement-bentonite
%	percent

CONSTRUCTION COMPLETION REPORT
SLURRY WALL AT THE FORMER ACID PLANT SEDIMENT DRYING AREA

1.0 INTRODUCTION

This Construction Completion Report summarizes the design and field activities to construct the slurry wall at the Former Acid Plant Sediment Drying Area located the ASARCO Smelter Facility in East Helena, Montana. The slurry wall was constructed from mid-October through mid-November 2006.

The goal of this project assignment was to design and construct a slurry wall to encompass the Former Acid Plant Sediment Drying Area. Subsurface sediments and groundwater underlying the Former Acid Plant Sediment Drying Area encompassed by the slurry wall has been identified as a primary source of arsenic in down-gradient groundwater. The slurry wall was installed as a continuous slurry trench backfilled with a soil-bentonite (SB) mixture. The dimension of the slurry wall is 820 feet in length, 32.5 to 37 feet in depth, and 3 feet wide. Drawing 1 shows the general layout of the slurry wall.

2.0 DESIGN APPROACH

Shaw was contracted by ASARCO to design the slurry mixture. The design of the slurry backfill mixture was conducted in five phases, as listed below:

- Phase 1 – Site Resources
- Phase 2 – Clay Compatibility via Index Tests
- Phase 3 – Grout Compatibility via Index Tests
- Phase 4 - Slurry Mix
- Phase 5 - Long-Term Compatibility/Permeability Test

A slurry backfill mix was designed based on a maximum hydraulic conductivity (or permeability) of 1 x 10^{-7} centimeters per second (cm/sec). The major factors that determine the design specifications for a slurry wall are the types of contaminants present, their associated concentrations, and the compatibility of the slurry wall materials. Shaw, in conjunction with Geo-Solutions, Inc., performed the bench scale tests utilizing field materials obtained from ASARCO.

The initial bench scale laboratory studies were performed in September 2006. Two separate bench scale laboratory studies were initiated using SB and soil-cement-bentonite (SCB) mixes. The SCB bench scale laboratory study (Phase 3) was started on the cement compatibility for the SCB mix in case bentonite was not compatible with site groundwater.

2.1 PHASE 1 – SITE RESOURCES

Clean onsite borrow soils were utilized in the slurry backfill mix to compensate for the anticipated lack of fines in the in situ soils to be excavated from the Former Acid Plant Sediment Drying Area as one of the components of the slurry backfill mix. An area east of the proposed Corrective Action Management Unit (CAMU) Phase 2 Cell was utilized as the clean onsite borrow source. Although the onsite borrow source was not located in the CAMU footprint, the

borrow source soils are commonly referred to as the "CAMU soils" in the bench scale laboratory studies.

ASARCO conducted a site investigation in August 2006 in the Former Acid Plant Sediment Drying Area. Four soil borings were drilled in the vicinity of the proposed slurry wall location to more fully characterize the soil conditions and determine the required depth of the slurry wall to "key in" to the existing low permeability tuff / volcanic ash unit. Soil collected from the soil borings, soil collected from the clean onsite borrow source, and groundwater samples were sent directly to Geo-Solutions to conduct bench scale laboratory studies. The soil borings data indicated the existence and depth of an ash unit that underlies the saturated alluvial and gravel in the Former Acid Plant Sediment Drying Area. Copies of the soil borings are located in Work Plan (Shaw, 2006).

2.2 PHASE 2 – CLAY COMPATIBILITY TESTING

The initial bench scale laboratory study to assess the gross compatibility of three commercial clays with site groundwater was performed using "Index" tests The Index tests included (1) Chemical Desiccation, (2) Sedimentation/Flocculation, and (3) Modified Filter Press with Groundwater. The three commercial clays tested for compatibility with site groundwater included American Petroleum Institute (API) premium grade bentonite, salt resistant bentonite, and attapulgite clay. Based on the results of the Index tests, the API bentonite was compatible with the site groundwater and was used for Phase 4 testing (see Section 2.4). Results of the Index tests are located in the Work Plan (Shaw, 2006).

2.3 PHASE 3 – GROUT COMPATIBILITY TESTING

Index-type compatibility tests were performed with cement grouts (for the SCB mix) to detect potential incompatibilities or reaction between the cement grouts and site groundwater. The Phase 3, Grout Compatibility Tests were performed concurrently with Phase 2, Clay Compatibility Testing. The results of the grout compatibility Index-type tests were stopped and not completed because of the favorable test results from the Phase 2 Clay Compatibility Testing.

2.4 PHASE 4 - SLURRY MIX

Since the compatibility tests proved that the bentonite was compatible with groundwater the SB slurry was formulated. Based on the Index Test results, five mixtures were formulated and tested to determine the optimum mixture for low permeability of water based on the site samples provided by ASARCO. The four SB backfill design mixes formulated and tested included API-type bentonite at percent additives ranging from 1.1 to 7 with a 50 percent (%) blend of insitu soil (borings soils) and borrow source soil. The fifth SB backfill design mix formulated included 100% onsite borrow soil with 2.8% API-type bentonite.

The permeability results of the five mixes ranged from 1.4×10^{-8} to 4.6×10^{-8} cm/sec, which indicated that all the SB backfill design mixes tested met or exceeded the standard of less than 1×10^{-7} cm/sec. The No. 2 SB backfill design mix with a 2.3% bentonite added to a 50%/50% mixture of excavated soil and borrow soil was recommended to and approved by the U.S.

Environmental Protection Agency (EPA) as the selected SB backfill design mix. A SB backfill design mix with 2.5% bentonite was utilized for the construction planning phase of the project.

2.5 PHASE 5 - LONG-TERM COMPATIBILITY/PERMEABILITY TEST

Due to time constraints, the long-term permeability/compatibility test of the SB backfill mixture (i.e., Mix No. 2) was run concurrently with the construction of the slurry wall. The long-term test utilized site groundwater, which was permeated through a laboratory SB backfill mixture to more closely simulate the expected permeability of the barrier wall and longer term chemical compatibility of the materials at the site.

At press time, a memorandum from Geo-Solutions discussing the status of the long-term permeability tests is presented in Appendix A, Slurry Backfill Mixture Test Results. In summary, the long term permeability test has now been running utilizing site groundwater from the ASARCO site for seven weeks. The goal is to have at least two pore volumes of groundwater pass through the specimen to ensure steady state flow (physical and chemical steady state) and determine the actual date to terminate the test. Based on the calculated pore volume of the test sample about 0.98 pore volumes of groundwater have passed through the specimen to date. At this time, the specimen is progressing as expected and the long term permeability is stable, with initial indications of no incompatibility with the groundwater. The final results of the long-term test will be submitted to ASARCO under a separate document.

3.0 CONSTRUCTION

3.1 SITE PREPARATION

The northwest side of the Former Acid Plant Sediment Drying Area was filled and compacted with clean onsite borrow soils (extending out about 5 to 6 feet into the adjacent concrete roadway) to create a more stable working platform during the slurry wall excavation and backfilling activities. Approximately 400 cubic yards (CY) of clean onsite borrow soil was transported from the borrow area, graded in place and compacted to create this working platform to maintain a more consistent elevation on which to operate the heavy equipment during construction activities. The purpose of the working platform was to provide a relatively level or consistent surface on which to operate heavy construction equipment during excavation and backfilling of the trench. The edge along the northwest side was stabilized with "Ecology" blocks provided by ASARCO. Straw bails were placed along the outside edge of the Ecology blocks for sedimentation and erosion control prevention.

The west corner of the original slurry wall alignment was modified to a point about 28 feet north and east to avoid a concrete curb that conveys surface water runoff away from the Former Acid Plant Sediment Drying Area, and permit the excavator to complete the west corner without impacting the truck-loading building.

The south side of the slurry wall alignment was located on top of asphalt and concrete slabs. A nine foot wide section of asphalt and concrete slab was broken and removed along the slurry wall alignment on this side to permit slurry wall excavation activities to proceed unimpeded by the asphalt and concrete slabs.

Four monitoring wells are located inside the foot print of the slurry wall each protected with four bollards. Shaw placed clean, empty drums over each well casing to provide additional protection from soil and slurry.

Temporary construction fence (i.e., orange construction fence) was placed along two sides of the site bounded on the other two sides by Lower Lake and an existing chain link fence leaving two openings for ingress and egress of construction traffic.

3.1.1 Utility

Utility clearance was coordinated in conjunction with ASARCO. The slurry wall alignment was adjusted prior to excavation to avoid existing underground utilities while maintaining at least ten (10) feet horizontal clearance.

3.1.2 Borrow Soil

The onsite borrow source was identified by ASARCO as an area east of the proposed CAMU Phase 2 Cell. Approximately 4,000 cy of soil was removed and transported from an area approximately one (1) acre in size. The vegetative layer was scraped off and placed adjacent to the edges of the borrow area limits. Borrow soil was removed in thin layers to a final depth of approximately one and one half (1.5) feet below the existing ground surface. Silt fence was place around the borrow area for erosion and sedimentation prevention and control. The borrow soil was transported via side dump trucks to the Former Acid Plant Sediment Drying Area and stockpiled near the middle of the site on clean soils for incorporation into the SB backfill mixture.

3.1.3 Erosion Control

The site, in general, slopes from the southwest to the northeast towards Lower Lake. The southwest side of the site has an existing concrete berm (along the roadway and asphalted area) and concrete "knee" wall (along Upper Lake's shoreline) to control run-on/runoff storm water flow. In addition, an existing soil berm exists along the northeast side of the site near the edge of Lower Lake.

A combination of silt fence, straw bales, and soil berms (using clean soil from the onsite borrow source) were installed along the remaining perimeter of the site for sedimentation and erosion control or prevention with straw bales installed in strategic locations for anticipated construction equipment access. An additional soil berm was placed at the southeast side adjacent to the edge of the Upper Lake.

3.2 SOIL-BENTONITE SLURRY

The bentonite selected for the slurry backfill mixture was Hydrogel produced by Wyo-Ben, which meets the A.P.I. Specifications 13-A, Sec. 9-2004. The bentonite was delivered in "super sacks" weighing approximately 2,800 pound or more and temporarily stored in two separate buildings near the slurry wall site.

The bentonite slurry was produced using an Eductor-mixer system, which is a flash-type mixer and a circulation holding tank. The Eductor mixer introduces the dry bentonite into a highly turbulent water jet and discharges into a low speed circulation holding tank. The production/mix water was pumped directly from Upper Lake. The holding tank was a 20,000 gallon lined storage tank. A high volume recirculation pump was connected to the circulation holding tank via flexible hoses with cam lock fittings.

The SB backfill material was mixed on the ground surface adjacent to the trench through the coordinated utilization of a front end loader and track excavator. Prior to excavation activities, the onsite borrow soil was placed in a "windrow" near the slurry wall alignment. One super sack of bentonite was placed adjacent to the borrow soil windrow at intervals of every fifteen (15) feet or less. A dry soil-bentonite mix consisted of mixing 30 CY of borrow soil with 30 CY of suitable excavated soil with one super sack of bentonite, which gives a calculated minimum of 1.57% dry bentonite for the "dry" backfill mixture. It should be noted that this is a dry mixture and as such does not contain the entire amount of bentonite required to be utilized as slurry trench backfill as the SB backfill design mix. On average over two percent (2%) dry bentonite was added to the blended backfill soils. Another one (1%) to one and one half (1.5%) percent bentonite was added to the dry SB backfill mix by mixing "wet" bentonite slurry from the circulation holding tank to the dry mix (to obtain a workable slump) for a total bentonite content in excess of three percent (3%).

Blending of the dry backfill mixture with the wet bentonite slurry was accomplished by mixing the dry SB mix with the wet slurry utilizing the excavator with a muck bucket working in coordination with a front end loader. The equipment continued to blend or "knead" the dry and wet components together adding sufficient wet bentonite slurry until a homogeneous and proper consistency SB backfill mixture was achieved. Only once this proper consistency (proper slump) was achieved was the SB backfill mixture permitted to be utilized as SB backfill material. All slump test results performed on the SB backfill material were within the required slump of 4 to 6 inches (see Appendix B for slump test results).

3.3 EXCAVATION AND BACKFILL PROCEDURES

The slurry trench was excavated with a Komatsu PC 750 excavator with a 50-foot long reach arm and 3 foot wide bucket. The four sides of the slurry wall that encompass the Former Acid Plant Drying Area were identified as Sides A, B, C, and D. The four corner of the slurry wall alignment were set by ASARCO. Corners at AD and AB were adjusted by ASARCO prior to excavation activities to avoid underground utilities or surface structures. Ten-foot stations were established on all four sides utilizing three feet (3') wooden surveying lathe individually marked starting with Station 0+00 and ending with Station 8+20 (consecutive numbering). The slurry wall was excavated starting with a lead in trench at the west corner of the site (i.e., corner AD) and proceeding along Side A in a clockwise direction until all four sides were completed and the wall was keyed back in at the west corner starting point..

A thirty-five foot "lead-in" trench was established at the start of the excavation activities. This "lead-in" trench ensured that the required depth at Station 0+00 was reached. The slurry was introduced into the trench during the initial phase of excavation was continuously and consistently maintained in the trench at a level within three feet (3') of the top of the trench. The

slurry acted to stabilize the trench walls so that shoring and dewatering was not required. The stability of the trench walls were also maintained by controlling the surcharge (weight) associated from the live and dead loads associated with deep trench excavations.

The slurry trench was excavated to the anticipated depths established in the Work Plan (Shaw, 2006). Soundings were made every ten feet (10') to measure the trench at the top of the low permeability tuff / volcanic ash layer and to the final depth of the trench. The low permeability tuff/ash layer was easily identifiable during excavation activities because of its distinctive greenish color. The trench was excavated at least two feet into the low permeability tuff/ash layer (see Appendix B for the daily QC reports). A trench width of three feet (3') was maintained for the duration of the excavation activities along the entire length of the trench with the exception of a localized are where fine sand and large debris were encountered on Side C (starting at Station 5+40). The trench width in this isolated area expanded to approximately twelve feet (12') in width at the surface for approximately forty linear feet (40') to Station 5+80..

A portable vibrating screen was used to screen materials excavated from the slurry trench to segregate suitable materials (3-inch minus soils) and unsuitable materials (soils greater than 3 inches). The suitable soils were used as a major component in the slurry backfill mixture while the unsuitable spoils were stockpiled within the slurry wall foot print. The unsuitable spoils encountered during excavation included but was not limited to cobbles, wood, concrete debris, sheet metal, pipe, telephone pole fragments, and other debris.

4.0 QUALITY CONTROL

4.1 QC INSPECTIONS

QC inspections were conducted to ensure that the project tasks were performed per the Work Plan (Shaw, 2006). The inspection included the following:

- Preparatory Inspection
- Initial Inspection
- Equipment Inspections
- Field Inspections
- Final Inspection
- Surveys
- Review of Manufacturers' Certificates of Compliance
- Inspection Checklists

The Preparatory Inspections were conducted on October 17, 2006 and was attended by representatives from Shaw and ASARCO followed by additional Preparatory Inspections on October 19, 20, and 23, 2006 attended by Shaw and Shaw's various subcontractor representatives. Initial Inspections were conducted on October 18 and 28, 2006 including but not limited to discussions relative to project compliance with specifications, field tests, and quality of workmanship. These Initial Inspection meetings were attended by Shaw and Geo-Solutions onsite representatives responsible for the quality assurance and quality control for the project. Equipment inspections were performed daily by Shaw and Shaw's subcontractor's field operators. Field Inspections were conducted periodically and documented in the daily reports

(see Appendix B). The Final Inspection was conducted on November 9, 2006 and was attended by Shaw and ASARCO management personnel (see Section 5.2 for further details). The EPA and MDEQ were invited by ASARCO to attend the Preparatory and Final Inspections held onsite.

4.2 FIELD TESTS

Onsite field tests were conducted to verify that the materials (e.g., water) and slurry mixture utilized in the construction of the slurry wall were in compliance with the requirements of the Work Plan. Shaw's subcontractor, Geo-Solutions, performed and documented all the required field tests. The field test results were documented in Geo-Solutions' Daily Quality Control Reports [DQCR] and are included in Attachment A. As required, seven (7) SB backfill samples were collected and tested for permeability/hydraulic conductivity; the laboratory results are presented in Table 1. As demonstrated by the results summarized in Table 1, all of the test results for hydraulic conductivity comply with or are better than the maximum permeability of less than 1×10^{-7} cm/sec.

5.0 SITE RESTORATION AND DEMOBILIZATION

5.1 EXCAVATED SPOIL MATERIAL

Excavated spoil material, which included suitable soil that was not used in the backfill mixture and segregated unsuitable material, were stockpiled on site within the slurry wall foot print. Excess slurry was mixed with excavated soils and excess borrow soils. A dike was created along the north, east, and west sides of the site to retain wet materials and soils in preparation of the installation of a temporary cap.

The equipment was decontaminated by pressure washing prior to leaving the ASARCO Smelter facility.

5.2 FINAL INSPECTION

Robert Miller (ASARCO), Jon Nickel (ASARCO), and Terry Rulon (Shaw), conducted the Final Inspection on November 9 and 10, 2006. ASARCO determined that the general site condition, borrow area, and slurry wall location was found acceptable. A signed copy of the Final Inspection is available for review in Appendix C Final Inspection.

5.3 DEMOBILIZATION

Demobilization of equipment started early in the project as equipment became available after completing required or specific tasks (i.e., compactor, dozer, etc.). With the completion of the backfill in the slurry wall trench the remaining equipment was decontaminated and demobilized from the site. Personnel, and support equipment was demobilized as needed throughout the duration of the project. All Shaw personnel and equipment were demobilized from the project on or before November 10, 2006.

5.4 LAND SURVEY

A topographic land survey was performed on November 14, 2006 of the final slurry wall location and surrounding area contours. Planar coordinates and elevation datum were surveyed to the local ASARCO coordinate system. The slurry wall As-Built is presented on Drawing 1.

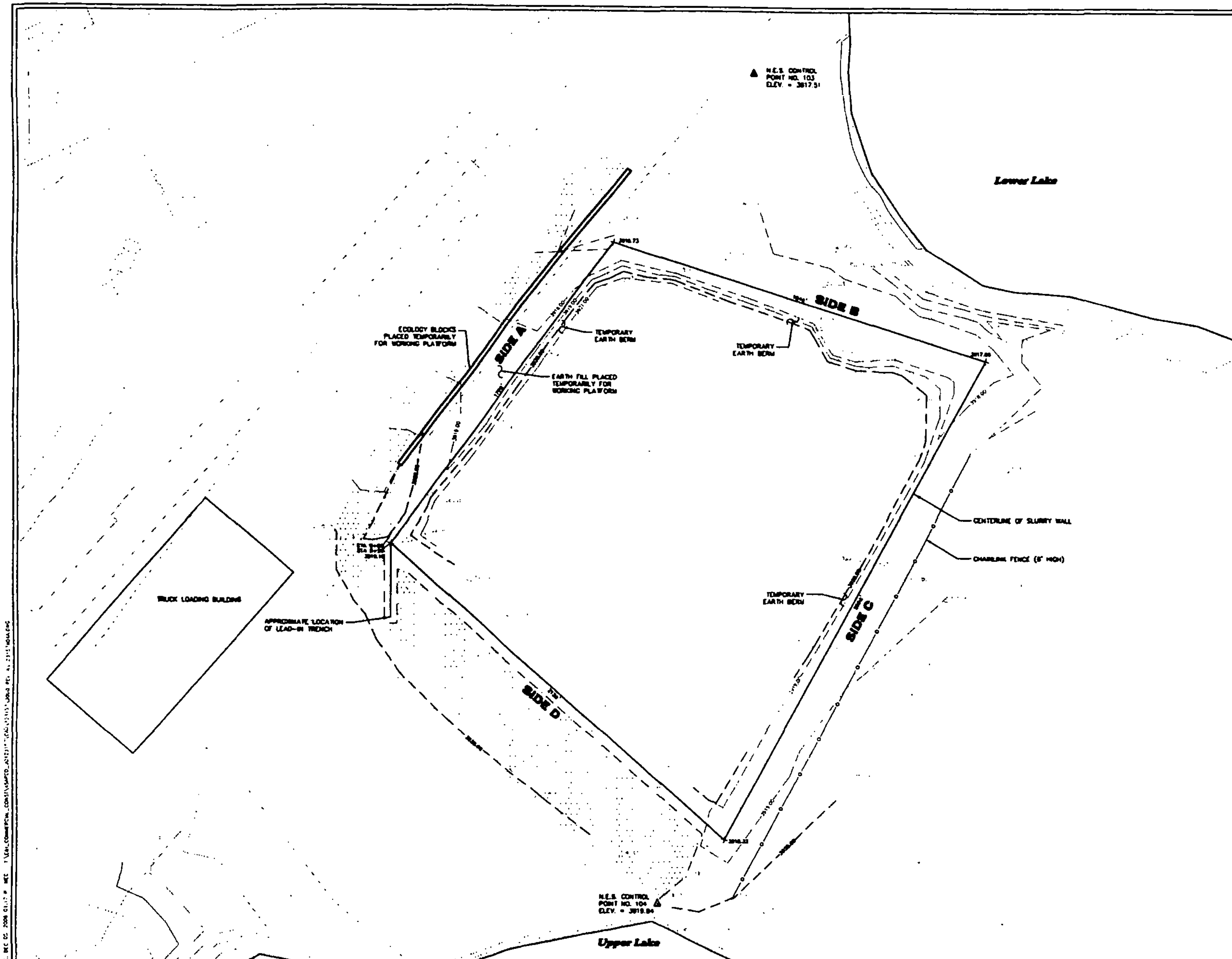
5.5 PHOTOGRAPHS

Select photographs illustrating the various stages of the project have been included to provide the reader with a visual illustration of the means and methods utilized by Shaw in the successful completion of the slurry wall. The photographs include but are not limited to photographs of site preparation, trench excavation, slurry backfill mixing, backfilling of the trench, and field test activities. The photographs are located in Appendix D Photographs.

6.0 REFERENCE

Shaw Environmental & Infrastructure, Inc. (Shaw). 2006. *Work Plan, Former Acid Plant Sediment Drying Area Slurry Wall, ASARCO Smelter Facility, East Helena, MT.* October 2006.

DRAWING



NOTES

1. THE SLURRY WALL IS 32.5 TO 37 FEET DEEP AND APPROXIMATELY 3 FEET WIDE. THE SLURRY WALL WAS BACKFILLED WITH A SOIL-BENTONITE MIXTURE. CONSTRUCTION ACTIVITIES OCCURRED FROM MID-OCTOBER THROUGH MID-NOVEMBER 2008.
2. THE STATIONS, STA 0+00 THROUGH STA 8+20, WERE ESTABLISHED PRIOR TO EXCAVATION ACTIVITIES FOR QUALITY ASSURANCE PURPOSES.
3. THE FINAL LOCATION OF THE SLURRY WALL IS SHOWN ON THIS DRAWING WITH THE FINAL LENGTH AT 834 FEET.
4. TOPOGRAPHIC SURVEY CONDUCTED 11-14-08 WITH A NIKON DTM 522 TOTAL STATION BY NORTHLAND ENGINEERING AND SURVEYING.
5. THE BASIS OF BEARING IS THE ASARCO COORDINATE SYSTEM.
6. ELEVATION DATUM IS THE ASARCO VERTICAL DATUM.
7. N.E.S. CONTROL POINTS ARE A #4 REBAR WITH A RED PLASTIC CAP MARKED "NES CONTROL"

LEGEND

- SURVEYED CENTERLINE OF SLURRY WALL
- N.E.S. CONTROL POINT
- SPOT ELEVATION
- CONTOUR LINE
- EXISTING BUILDING
- ASPHALT PAVEMENT

SLURRY WALL CORNER COORDINATE TABLE

CORNER ID	NORTHING	EASTING	ELEVATION
A,D	[illegible]	[illegible]	[illegible]
A,B	[illegible]	[illegible]	[illegible]
B,C	[illegible]	8704.1	3017.1
C,D	[illegible]	[illegible]	[illegible]

NOTE: SEE NOTE 5

ASARCO, LLC

ASARCO SMELTER FACILITY

DRAWING NUMBER 1

SLURRY WALL AS-BUILT AT THE FORMER ACID PLANT SEDIMENT DRYING AREA

Shaw Environmental, Inc.

TABLE

TABLE 1
SOIL-BENTONITE BACKFILL LABORATORY RESULTS

DATE SAMPLED	STATION	WATER CONTENT (%)	TOTAL DENSITY (pcf)	HYDRAULIC CONDUCTIVITY (cm/sec)
10/28/06	0-35	36.4	109.1	3.80E-08
10/31/06	0+20	37.9	105.6	4.90E-08
11/2/06	2+10	34.7	107	2.00E-08
11/4/06	3+60	34.1	113	3.10E-08
11/5/06	4+60	29.3	115	3.60E-08
11/6/06	5+90	30.2	119.9	2.70E-08
11/7/06	6+80	36.4	101.7	8.90E-08

APPENDICES

Appendix A

Slurry Backfill Mixture Test Results

Memorandum from Geo-Solutions

Date: 11/22/06
To: Russ Morgan, Terry Rulon, Elaine Coombe, Shaw
From: Steve Day, Geo-Solutions
Via: email

Subject: Laboratory Results from Field Samples of Soil Bentonite Slurry Wall, Asarco Site, East Helena, MT

Russ, Terry, and Elaine:

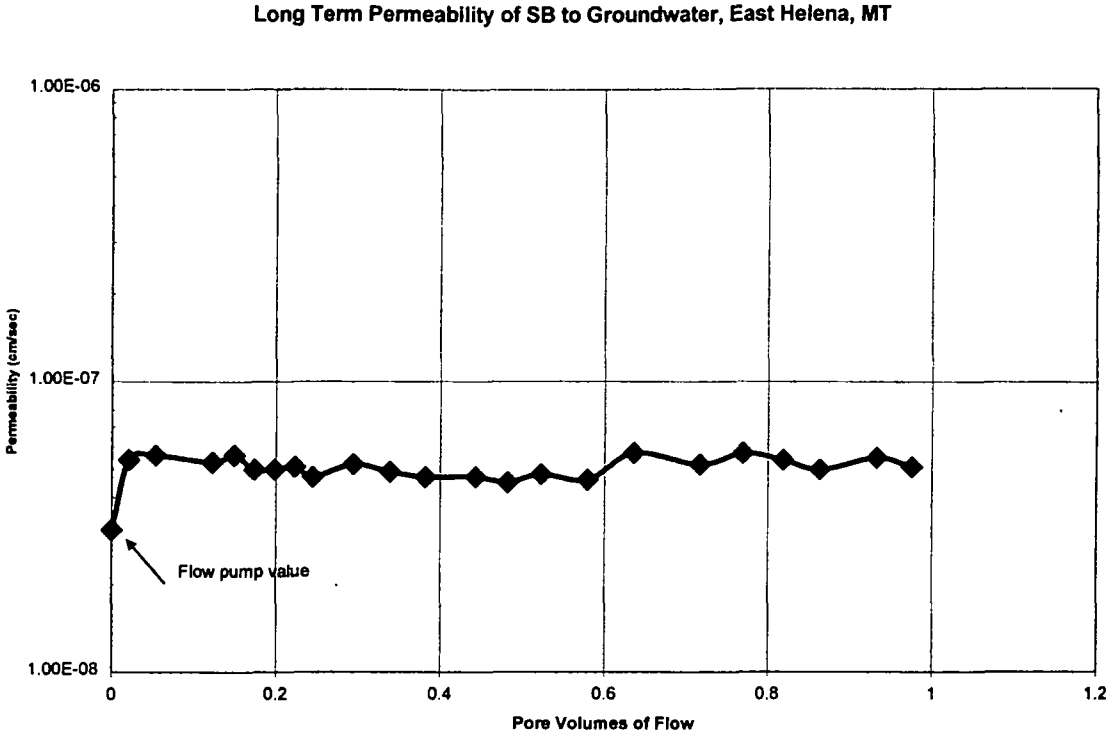
I have just received all of the test results from the samples of the soil-bentonite (SB) slurry wall obtained during construction. I also have some preliminary results from the long term permeability test of the SB with site groundwater. Results from the tests on the field samples are shown in the table below.

Date Sampled	Sta	Water Content (%)	Total Density (pcf)	Hydraulic Conductivity (cm/sec)
10/28/06	0-35	36.4	109.1	3.80E-08
10/31/06	0+20	37.9	105.6	4.90E-08
11/2/06	2+10	34.7	107	2.00E-08
11/4/06	3+60	34.1	113	3.10E-08
11/5/06	4+60	29.3	115	3.60E-08
11/6/06	5+90	30.2	119.9	2.70E-08
11/7/06	6+80	36.4	101.7	8.90E-08

All of the test results pass the maximum permeability of less than 1×10^{-7} cm/sec. The laboratory water contents are similar to the water contents we measured in the field during construction. I believe the laboratory permeability test results are somewhat conservative, since I measured somewhat higher densities in the field that the laboratory values.

The long term permeability test has now been running with site groundwater for seven weeks (42 days). The permeability of the specimen started at 3×10^{-8} cm/sec in the flow pump permeability test. When we moved to the long term test (constant head) the permeability rose to 5×10^{-8} cm/sec, as a result of the different apparatus and method. We are tracking pore volumes of flow with the goal of passing at least two pore volumes of groundwater through the specimen to ensure steady state flow (physical and chemical steady state) and determine when to terminate the test. Since we cannot measure the pore volume of the sample until we dissemble the test, I have estimated sample porosity based on previous experience. Based the

estimated pore volume we have now passed 0.98 pore volumes of groundwater through the specimen. We will measure the conductivity of the influent and effluent shortly to further gauge our progress toward steady state flow. At this time, the specimen is reacting as expected and the long term permeability is stable, indicating no incompatibility with the groundwater. The chart below shows the long term trend to date.



In conclusion, all test results to date indicate that we have designed and constructed a very low permeability and compatible SB slurry wall to contain the wastes at the Former Acid Plant Sediment Drying Area.

Please feel free to call me anytime.

Steve

Issued by:
Denver Office: 26 W. Dry Creek Circle, Suite 600, Littleton, CO 80120, Ph: 720-283-0505, Fax: 720-283-8055. Check out our web site at www.geo-solutions.com

Appendix B

Daily Reports

WYO-BEN, INC.

October 26, 2006

Steve Day
Geo-Solutions
26 West Dry Creek Circle
Suite 600
Littleton, CO 80120

Re: API 13A Section 9 specifications.

Dear Steve,

This letter is to certify that Hydrogel does meet or exceed API 13A Section 9 specifications. All material shipped to your site in East Helena, MT will meet these requirements. If requested we will provide a quality certificate for each lot shipped. Please call with any further questions.

Sincerely,

Stewart Krause
Senior Sales Engineer

Lgeos1

Wyo-Ben, Inc. P.O. Box 1979 Billings, MT 59103
406-652-6351 Fax: 406-656-0748 Email: email@wyoben.com

TO:14064492592

WYO-BEN, INC. **Certificate of Analysis**
API 13A Section 9 Bentonite

Analysis For: **Geo-Solutions**
Attn: Steve Day Room 129
Fax: (406) 449-2592

Date	Order No.	Product	Grade	Grams /350	Viscometer 600	Viscometer 300	PV	YP	YP/PV Ratio	Yield	M/C %	Mesh %-200	Gels 10s	Gels 10m	Water loss	PH	Wet Scrn	Lot No.
10/26/2006	6155	Hydrogel Bulk Bags	OW	22.5	49	38	11	27	2.45	108	7.3	75.6	8	21	13.2	8.8	3.1	10160612
	6154	Hydrogel Bulk Bags	OW	22.5	47	37	10	27	2.70	104	8.8	75.2	12	28	12.8	8.0	4.0	10160611
	6199	Hydrogel Bulk Bags	OW	22.5	39	29	10	19	1.90	98	8.2	80.4	9	21	12.4	8.3	3.4	10180612
	6159	Hydrogel Bulk Bags	OW	22.5	39	29	10	19	1.90	98	8.2	80.4	9	21	12.4	8.3	3.4	10180612
	6156	Hydrogel Bulk Bags	OW	22.5	47	37	10	27	2.70	104	8.8	75.2	12	28	12.8	8.0	4.0	10160611
	6158	Hydrogel Bulk Bags	OW	22.5	47	37	10	27	2.70	104	8.8	75.2	12	28	12.8	8.0	4.0	10160611

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

CALIBRATIONS

SB SLURRY WALL

DAILY QC RESULTS — SPECIFICATION: Shaw E&I Work Plan, October 2006

DATE: 10/24/2006 — INSPECTOR: Steven Day, Geo-Solutions

TEST EQUIPMENT	DATE	CONDITION	CALIBRATION METHOD	RESULT	CONCLUSION
Marsh Funnel#1	10/24/2006	Cleaned & Inspected	API-RP13-1 distilled water	26 sec	OK
Marsh Funnel#2	10/24/2006	Cleaned & Inspected	API-RP13-1 distilled water	27 sec	OK
Mud Balance#1	10/24/2006	Cleaned & Inspected	API-RP13-1 distilled water	62.4 pcf	OK
Mud Balance#2	10/24/2006	Cleaned & Inspected	API-RP13-1 distilled water	62.4 pcf	OK
Laboratory Scale	10/24/2006	Cleaned & Inspected	Zero Check	0.00 gm	OK
Sounding Cable	10/24/2006	Cleaned & Inspected	comparison / checked	50 ft = 50 ft	OK
Wire Sieve #200	10/24/2006	Cleaned & Inspected[2]	Manufacturer's Certification	no holes or tears in screen	OK
Filter Press	10/24/2006	Cleaned & Inspected	API-RP13-1	parts ordered[3]	OK
Gauges	10/16/2006	New		0 to 200 psi	OK

NOTES:
1- OK indicates instrument is usable, functional, and operating as intended.
2- Certification on file in home office
3- Replacement cap, hose, and regulator to be received by 10/25/06.

COMMENTS:

SIGNED: _____ SIGNED: _____
Contractor's QC Supervisor — Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

MIX WATER

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I Work Plan, October 2006

DATE: 24-Oct-06

INSPECTOR: Steven Day
Geo-Solutions

WATER FOR SLURRY MIXING (1 per source)

DATE	TIME	pH (6-9)	HARDNESS (< 500 ppm)	OIL & ORGANICS	ALKALINITY (ppm)	TDS (ppm)
24-Oct	9:15	6.6	120	ND	60	<500

COMMENTS:

Sample obtained from shore of Upper Lake
Test Methods as follows:
pH: Alkalit by Merick (test strip)
TDS: AquaChek by Hach (test strip)
Alkalinity and Hardness: AquaChek by Hach (test strip)
Oil & Organics: Oil Test Paper by Macherey-Nagel (test strip)
Reported values interpolated between colored indicators as necessary.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Nordic / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

WC & FINES

SB SLURRY WALL

TEST REPORT

DATE: 25-Oct-06

INSPECTOR: Steven Day
Geo-Solutions

SAMPLE STATION: Borrow stockpile

WATER CONTENT

SB Backfill Prior to Installation

A	Weight of Wet Sample and Tare:	295	[input]	
B	Weight of Tare:	7	[input]	pan
C	Weight of Wet Sample:	288	=[A-B]	
D	Weight of Dry Sample and Tare:	246 gms	[input]	same pan
E	Weight of Dry Sample:	239	=[D-B]	
F	Weight of Water	49	=[C-E]	
G	Water Content (WC) %	20.50%	=[F/E]	

FINES

SB Backfill Prior to Installation

H	Weight of Wet Sample and Tare:	357 gms	[input]	
I	Weight of Tare:	7	[input]	pan
J	Weight of Total Wet Sample	350	=[H-I]	
K	Calculated Weight of Total Dry Sample:	290.45	=[J/(1+G)]	

Wet Sieve and Apply Direct Heat

Retained Material	1st trial	2nd trial	Final
S Dry Material and Tare:			137

Calculations

Retained Material

T	Weight of Total Dry Sample and Tare:	137	=S
U	Weight of Tare:	7	[input]
W	Weight of Dry #200 Material:	130	=[T-U]

PERCENT PASSING

AA	Finer #200	55.2%	=[(K-W)/K]

COMMENTS:

Soils appears to be clayey, organic silt. Organics from roots and straw, probably less than 2%.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

WC & FINES

SB SLURRY WALL

TEST REPORT

DATE: 26-Oct-06

INSPECTOR: Steven Day
Geo-Solutions

SAMPLE STATION: Borrow stockpile, AM.

WATER CONTENT

SB Backfill Prior to Installation

A	Weight of Wet Sample and Tare:	266
B	Weight of Tare:	7
C	Weight of Wet Sample:	259
D	Weight of Dry Sample and Tare:	226 gms
E	Weight of Dry Sample:	219
F	Weight of Water	40
G	Water Content (WC) %	18.26%

FINES

SB Backfill Prior to Installation

H	Weight of Wet Sample and Tare:	273 gms
I	Weight of Tare:	7
J	Weight of Total Wet Sample	266
K	Calculated Weight of Total Dry Sample:	224.92

Wet Sieve and Apply Direct Heat

Retained Material

		1st trial	2nd trial	Final
S	Dry Material and Tare:			105

Calculations

Retained Material

T	Weight of Total Dry Sample and Tare:	105
U	Weight of Tare:	7
W	Weight of Dry #200 Material:	98

PERCENT PASSING

AA Finer #200 56.4%

COMMENTS:

Soils appears to be clayey, silt.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

WC & FINES

SB SLURRY WALL

TEST REPORT

DATE: 26-Oct-06

INSPECTOR: Steven Day
Geo-Solutions

SAMPLE STATION: Borrow stockpile, PM

WATER CONTENT

SB Backfill Prior to Installation

A	Weight of Wet Sample and Tare:	209
B	Weight of Tare:	7
C	Weight of Wet Sample:	202
D	Weight of Dry Sample and Tare:	175 gms
E	Weight of Dry Sample:	168
F	Weight of Water	34
G	Water Content (WC) %	20.24%

FINES

SB Backfill Prior to Installation

H	Weight of Wet Sample and Tare:	259 gms
I	Weight of Tare:	7
J	Weight of Total Wet Sample	252
K	Calculated Weight of Total Dry Sample:	209.58

Wet Sieve and Apply Direct Heat

Retained Material

	1st trial	2nd trial	Final
S Dry Material and Tare:			97

Calculations

Retained Material

T	Weight of Total Dry Sample and Tare:	97
U	Weight of Tare:	7
W	Weight of Dry #200 Material:	90

PERCENT PASSING

AA Finer #200: 57.1%

COMMENTS:

Soils appears to be clayey, silt.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2008

DATE: 26-Oct-06

INSPECTOR: Steven Day, Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches)

SLURRY LEVEL: OK

VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
27-Oct	-00+35	0	0	0			Lead-in trench
27-Oct	-00+10	34	2	36	25	450	Lead-in trench
27-Oct	00+00	33.5	0	34	10	347.5	Lead-in trench - incomplete
27-Oct	00+10	30	0	30	10	317.5	incomplete

SQ FT TODAY: 1,115

SQ FT TODATE: 1,115

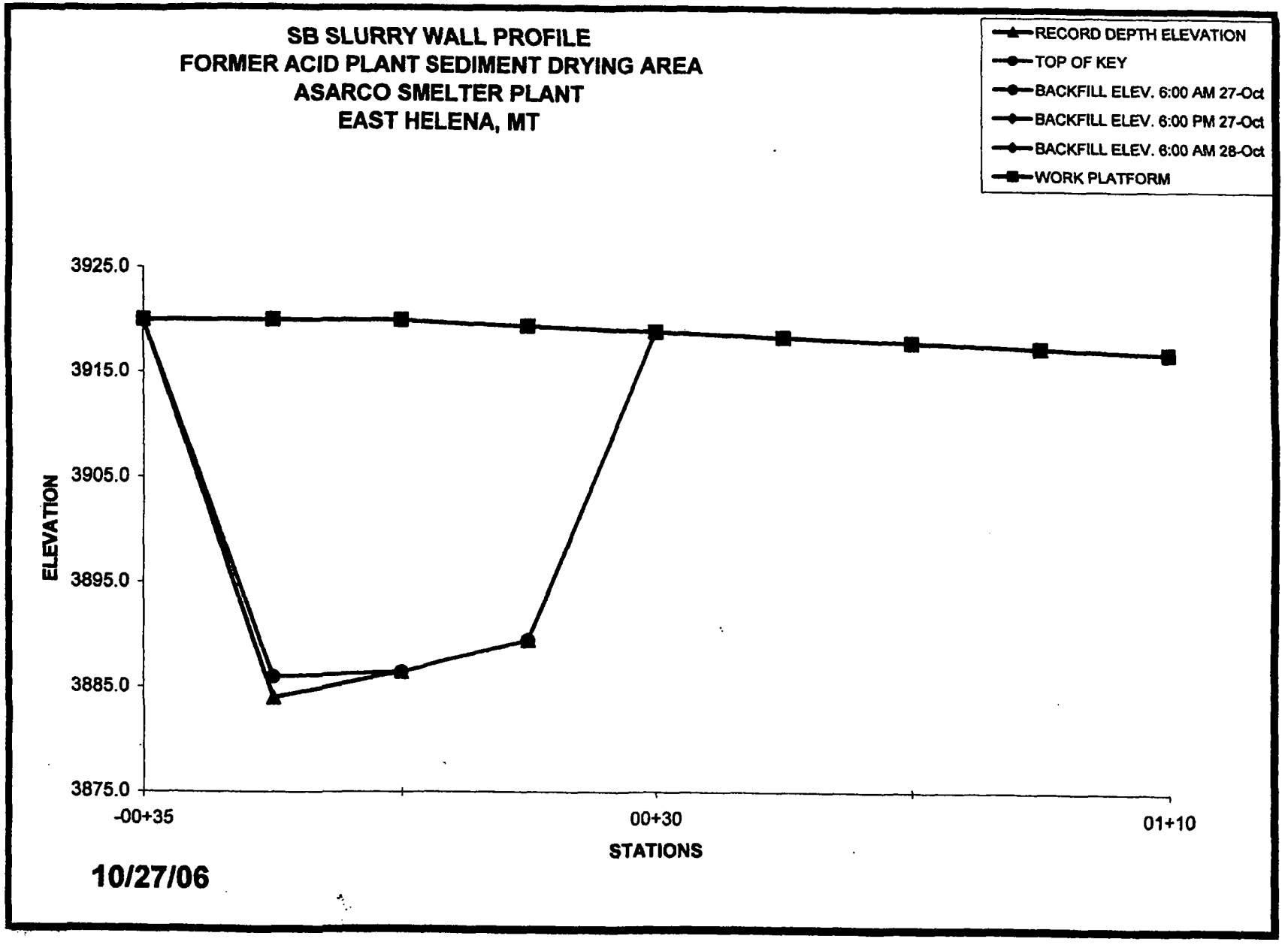
COMMENTS:

Started excavation at 1:30. Good excavating conditions.

Estimated plan quality = 800 lf x 35 ft = 28000 sf

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 6:00 AM 27-Oct
BACKFILL ELEV. 6:00 PM 27-Oct
BACKFILL ELEV. 6:00 AM 28-Oct
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
-00+35
00+30
01+10
STATIONS
10/27/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

WC & FINES

SB SLURRY WALL

TEST REPORT

DATE: 27-Oct-06

INSPECTOR: Steven Day
Geo-Solutions

SAMPLE STATION: Borrow stockpile, from ha

WATER CONTENT

SB Backfill Prior to Installation

A	Weight of Wet Sample and Tare:	253
B	Weight of Tare:	7
C	Weight of Wet Sample:	246
D	Weight of Dry Sample and Tare:	211 gms
E	Weight of Dry Sample:	204
F	Weight of Water	42
G	Water Content (WC) %	20.59%

FINES

SB Backfill Prior to Installation

H	Weight of Wet Sample and Tare:	263 gms
I	Weight of Tare:	7
J	Weight of Total Wet Sample	256
K	Calculated Weight of Total Dry Sample:	212.29

Wet Sieve and Apply Direct Heat

Retained Material

		1st trial	2nd trial	Final
S	Dry Material and Tare:			118

Calculations

Retained Material

T	Weight of Total Dry Sample and Tare:	118
U	Weight of Tare:	7
W	Weight of Dry #200 Material:	111

PERCENT PASSING

AA	Finer #200	47.7%

COMMENTS:

Soil appears to be clayey, silt.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 27-Oct-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS

2 per shift

TIME:	RESULT:	
10:40	42	SECONDS
1:00	41	
2:50	40	
3:25	45	

DENSITY- MINIMUM 64 PCF

2 per shift

TIME:	RESULT:	
10:40	64.5	PCF
1:00	64.5	

FILTRATE - MAXIMUM 30 CC

1 per truckload

TIME:	RESULT:	
10:40	19	CC

pH > 7 UNITS

1 per shift

TIME:	RESULT:	
10:40	8.5	UNITS

BENTONITE CONTENT

1 per project

5600 lbs of bentonite + 12114 gals = 5.5%

Above mix made and tested at 10:40, see above results

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS

2 per shift

TIME:	DEPTH:	RESULT:	
NA	NA	NA	PCF

DENSITY- 64 to 85 PCF

2 per shift

TIME:	DEPTH:	RESULT:	
NA	NA	NA	PCF

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:

Started slurry mixing at 10:00. No trench slurry testing due to limited excavation and excavation in lead-in trench only.

Trench slurry testing will start tomorrow.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 27-Oct-06 — INSPECTOR: Steven Day, Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:		Station:		Result:	

DENSITY (1 per shift)

Time:		Station:		Result:	

FINES (1 per shift)

Time:		Station:		Result:	

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station:

COMMENTS:

No backfill made today.

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 27-Oct-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 6:00 AM 27-Oct FT	BACKFILL ELEV. 6:00 PM 27-Oct FT	BACKFILL ELEV. 6:00 AM 28-Oct FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 6:00 AM 27-Oct FT	BACKFILL DEPTH 6:00 PM 27-Oct FT	BACKFILL DEPTH 6:00 AM 28-Oct FT	BACKFILL AREA 6:00 AM 27-Oct SF	BACKFILL AREA 6:00 PM 27-Oct SF	BACKFILL AREA 6:00 AM 28-Oct SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+10	3884.0	3886.0	3920.0	3920.0	3920.0	3920	36	34	0	0	0	450	450	450
0+00	3886.5	3886.5	3920.0	3920.0	3920.0	3920	33.5	33.5	0	0	0	347.5	347.5	347.5
0+10	3889.5	3889.5	3919.5	3919.5	3919.5	3919.5	30	30	0	0	0	317.5	317.5	317.5
0+30	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
0+50	3918.5	3918.5	3918.5	3918.5	3918.5	3918.5						0	0	0
0+70	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
0+90	3917.5	3917.5	3917.5	3917.5	3917.5	3917.5						0	0	0
1+10	3917.0	3917.0	3917.0	3917.0	3917.0	3917						0	0	0
1+30	3916.5	3916.5	3916.5	3916.5	3916.5	3916.5						0	0	0
1+50	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
1+70	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
1+90	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+10	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+30	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+50	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+70	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+90	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
3+10	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+30	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+50	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+70	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+90	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+10	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+30	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+50	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+70	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+90	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+10	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+30	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+50	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+70	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+90	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+10	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+30	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+50	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+70	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+90	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+10	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+30	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+50	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+70	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+90	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
												1115 SF	1115 SF	1115 SF

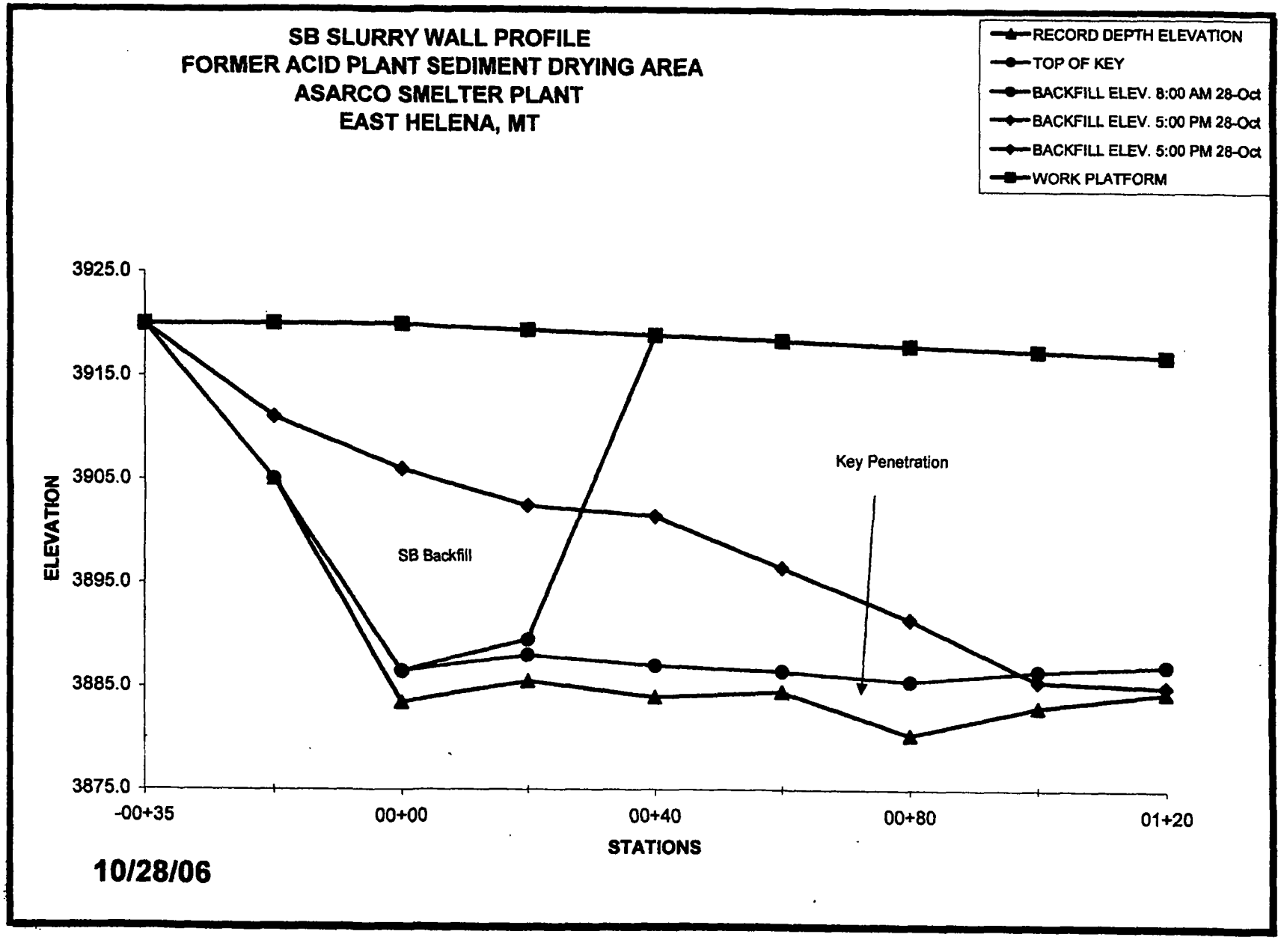
Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	0+00
Toe	35	0+00
Distance =		0+00
AM Backfill Slope =		0.0

SCB Backfill	Today	Todate
	0 SF	1115 SF
	0 CY	124 CY

CHART DATA


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 8:00 AM 28-Oct
BACKFILL ELEV. 5:00 PM 28-Oct
BACKFILL ELEV. 5:00 PM 28-Oct
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
Key Penetration
SB Backfill
-00+35
00+00
00+40
00+80
01+20
STATIONS
10/28/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 28-Oct-06

INSPECTOR: Steven Day, Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches)

SLURRY LEVEL: OK

VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
27-Oct	-00+35	0	0	0			Lead-in trench
27-Oct	-00+10	34	2.0	36	25	450	Lead-in trench
28-Oct	00+00	33.5	3.0	36.5	10	362.5	Lead-in trench
28-Oct	00+10	33.5	3.0	36.5	10	365	Key material appears to be a low
28-Oct	00+20	31.5	2.5	34.0	10	352.5	permeability volcanic ash or tuff.
28-Oct	00+30	32.5	2.0	34.5	10	342.5	Color of tuff is distinctive blue-green-white.
28-Oct	00+40	32	3.0	35.0	10	347.5	Key material becomes tan in color after
28-Oct	00+50	32	2.5	34.5	10	347.5	exposure (overnite) to the atmosphere
28-Oct	00+60	32	2.0	34.0	10	342.5	
28-Oct	00+70	31.5	2.5	34.0	10	340	
28-Oct	00+80	32.5	5.2	37.7	10	358.5	
28-Oct	00+90	31	2.6	33.6	10	356.5	
28-Oct	01+00	31	3.5	34.5	10	340.5	
28-Oct	01+10	30	2.7	32.7	10	336	
28-Oct	01+20	30	2.6	32.6	10	326.5	

SQ FT TODAY: 4,518

SQ FT TODATE: 4,968

COMMENTS:

Normal excavating conditions.

Estimated plan quality = 800 lf x 35 ft = 28000 sf

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 28-Oct-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
8:10	40	SECONDS
8:50	48	
9:25	42	
11:00	40	
14:00	42	
16:00	40	

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
8:10	64.5	PCF
8:50	65	

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
8:10	16	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
8:10	8	UNITS

BENTONITE CONTENT
1 per project
B/W >5.5 % Completed 10/27

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
0-10	30	40	PCF
0+50	30	48	

DENSITY- 64 to 85 PCF
2 per shift

STA:	DEPTH:	RESULT:	
0-10	30	67	PCF
0+50	30	75	
0+70	30	76	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:
Normal operations

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 28-Oct-06

INSPECTOR: Steven Day
Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:	
10:00	0-35	4.75	INCH
11:05	0-35	4	
12:30	0-35	4	

DENSITY (1 per shift)

Time:	Station:	Result:	
10:00	0-35	121	PCF
15:00	0-35	117	

FINES (1 per shift)

Time:	Station:	Result:	
10:00	0-35	34	%

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station:
0-35

COMMENTS:

Started backfill mixing today at 8:30. Normal operations.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 28-Oct-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 8:00 AM 28-Oct FT	BACKFILL ELEV. 5:00 PM 28-Oct FT	BACKFILL ELEV. 5:00 PM 28-Oct FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 8:00 AM 28-Oct FT	BACKFILL DEPTH 5:00 PM 28-Oct FT	BACKFILL DEPTH 5:00 PM 29-Oct FT	BACKFILL AREA 8:00 AM 28-Oct SF	BACKFILL AREA 5:00 PM 28-Oct SF	BACKFILL AREA 5:00 PM 29-Oct SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3905.0	3911.0	3911.0	3920	15	15	15	9	9	0	30	30
0+00	3883.5	3886.5	3886.5	3906.0	3906.0	3920	36.5	33.5	33.5	14	14	0	356.25	356.25
0+20	3885.5	3888.0	3889.5	3902.5	3902.5	3919.5	34	31.5	30	17	17	0	395	395
0+40	3884.0	3887.0	3919.0	3901.5	3901.5	3919	35	32		17.5	17.5	0	345	345
0+60	3884.5	3888.5	3918.5	3896.5	3896.5	3918.5	34	32		22	22	0	295	295
0+80	3883.3	3885.5	3918.0	3891.5	3891.5	3918	34.7	32.5		26.5	26.5	0	202	202
1+00	3883.0	3886.5	3917.5	3886.5	3886.5	3917.5	34.5	31		32	32	0	107	107
1+20	3884.4	3887.0	3917.0	3885.0	3885.0	3917	32.6	30		32	32	0	31	31
1+40	3916.5	3916.5	3916.5	3916.5	3916.5	3916.5						0	0	0
1+60	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
1+80	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+00	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+20	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+40	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+60	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+80	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
3+00	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
3+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+20	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+40	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+60	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+80	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
8+00	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
												0 SF	1761 SF	1761 SF

Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	9	-0+25
Toe	35	1+20
Distance =		1+45
AM Backfill Slope =		4.1

SB Backfill	Today	Todate
	1761 SF	1761 SF
	196 CY	196 CY

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 10/28/2006 — INSPECTOR: Steven Day, Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft — TARGET DRY ADDITION = 1.5 %

DATA AS OF END SHIFT

NUMBER OF BULK BAGS MIXED AND PLACED TODAY		4	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	11,200	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		1,761	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		528,300	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.120%	

NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		4	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	11,200	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		1,761	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		528,300	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.12%	

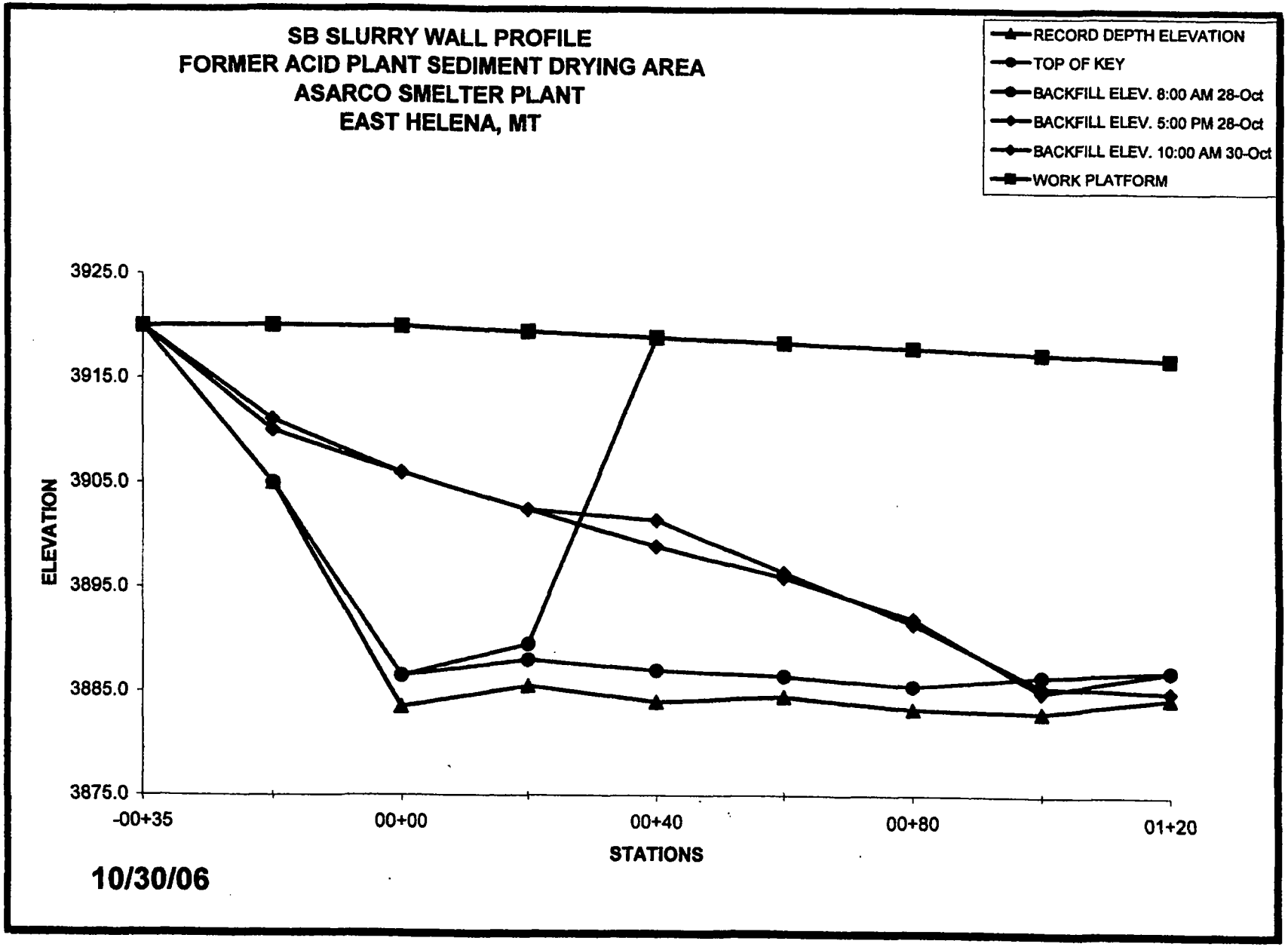
COMMENTS:

Estimated addition of bentonite via sluicing (based on laboratory test results) is an additional 1 to 1.5 %

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

BENTOCALC


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 8:00 AM 28-Oct
BACKFILL ELEV. 5:00 PM 28-Oct
BACKFILL ELEV. 10:00 AM 30-Oct
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
-00+35
00+00
00+40
00+80
01+20
STATIONS
10/30/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 30-Oct-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 8:00 AM 28-Oct FT	BACKFILL ELEV. 5:00 PM 28-Oct FT	BACKFILL ELEV. 10:00 AM 30-Oct FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 8:00 AM 28-Oct FT	BACKFILL DEPTH 5:00 PM 28-Oct FT	BACKFILL DEPTH 10:00 AM 30-Oct FT	BACKFILL AREA 8:00 AM 28-Oct SF	BACKFILL AREA 5:00 PM 28-Oct SF	BACKFILL AREA 10:00 AM 30-Oct SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3905.0	3911.0	3910.0	3920	15	15	15	9	10	0	30	25
0+00	3883.5	3886.5	3886.5	3906.0	3906.0	3920	36.5	33.5	33.5	14	14	0	356.25	343.75
0+20	3885.5	3888.0	3889.5	3902.5	3902.5	3919.5	34	31.5	30	17	17	0	395	395
0+40	3884.0	3887.0	3919.0	3901.5	3899.0	3919	35	32		17.5	20	0	345	320
0+60	3884.5	3886.5	3918.5	3896.5	3896.0	3918.5	34	32		22	22.5	0	295	265
0+80	3883.3	3886.5	3918.0	3891.5	3892.0	3918	34.7	32.5		26.5	26	0	202	202
1+00	3883.0	3886.5	3917.5	3885.5	3886.0	3917.5	34.5	31		32	32.5	0	107	107
1+20	3884.4	3887.0	3917.0	3885.0	3887.0	3917	32.6	30		32	30	0	31	46
1+40	3916.5	3916.5	3916.5	3916.5	3916.5	3916.5						0	0	0
1+60	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
1+80	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+00	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+20	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+40	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+60	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
2+80	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
3+00	3916.0	3916.0	3916.0	3916.0	3916.0	3916						0	0	0
3+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+20	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+40	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+60	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+80	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
8+00	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
												0 SF	1761 SF	1704 SF

Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	-0+35
Toe	32	1+20
Distance =		1+55
AM Backfill Slope =		4.8

SB Backfill	Today	Todate
	1704 SF	1704 SF
	189 CY	189 CY

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 30-Oct-06

INSPECTOR: Steven Day
Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches)

SLURRY LEVEL: OK

VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
27-Oct	-00+35	0	0	0			Lead-in trench
27-Oct	-00+10	34	2.0	36	25	450	Lead-in trench
28-Oct	00+00	33.5	3.0	36.5	10	382.5	Lead-in trench - Corner A
28-Oct	00+10	33.5	3.0	36.5	10	365	Key material appears to be a low
28-Oct	00+20	31.5	2.5	34.0	10	352.5	permeability volcanic ash or tuff.
28-Oct	00+30	32.5	2.0	34.5	10	342.5	Color of tuff is distinctive blue-green-white
28-Oct	00+40	32	3.0	35.0	10	347.5	Key material becomes tan in color after
28-Oct	00+50	32	2.5	34.5	10	347.5	exposure (overnite) to the atmosphere
28-Oct	00+60	32	2.0	34.0	10	342.5	
28-Oct	00+70	31.5	2.5	34.0	10	340	
28-Oct	00+80	32.5	2.2	34.7	10	343.5	
28-Oct	00+90	31	2.8	33.8	10	341.5	
28-Oct	01+00	31	3.5	34.5	10	340.5	
28-Oct	01+10	30	2.7	32.7	10	336	
28-Oct	01+20	30	4.0	34.0	10	333.5	cleaned toe 10/30
30-Oct	01+30	31	3.0	34.0	10	340	
30-Oct	01+40	30.5	3.0	33.5	10	337.5	
30-Oct	01+50	30.5	2.5	33.0	10	332.5	
30-Oct	01+60	30	3.0	33.0	10	330	more concentrated debris starting here
30-Oct	01+70	30.5	2.5	33.0	10	330	debris
30-Oct	01+74	30	4.0	34.0	4	134	debris - Corner B
30-Oct	01+80	31.5	2.5	34.0	10	335	debris
30-Oct	01+90	30.5	2.5	33.0	10	335	debris
30-Oct	02+00	30.5	3.0	33.5	10	332.5	debris

SQ FT TODAY: 4,518

SQ FT TODATE: 7,752

COMMENTS:

Very cold this am, slow start. Considerable debris in excavation starting at 1+60

Estimated plan quality = 800 lf x 35 ft = 28000 sf

% COMPLETE: 28%

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 30-Oct-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
10:10	40	SECONDS
11:35	42	
14:00	40	

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
10:10	64.5	PCF
11:35	64.5	

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
10:10	15	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
10:10	8.5	UNITS

BENTONITE CONTENT
1 per project
B/W >5.5 % Completed 10/27

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
1+00	30	40	PCF
1+60	30	43	

DENSITY- 64 to 85 PCF
2 per shift

STA:	DEPTH:	RESULT:	
1+00	30	80	PCF
1+60	30	78	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:
Very cold this am, slow start. Temp of slurry at 10:00 = 40 degrees F.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 10/30/2006 — INSPECTOR: Steven Day, Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft — TARGET DRY ADDITION = 1.5 %

DATA AS OF END SHIFT

NUMBER OF BULK BAGS MIXED AND PLACED TODAY		5	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	14,000	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		2,140	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		642,000	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.181%	

NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		9	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	25,200	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		3,818	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		1,145,400	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.20%	

COMMENTS:

Estimated addition of bentonite via sluicing (based on laboratory test results) is an additional 1 to 1.5 %

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 30-Oct-06 — INSPECTOR: Steven Day, Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:	
10:40	0-35	4	INCH
11:50	0-35	5.5	
13:00	0-35	4	

DENSITY (1 per shift)

Time:	Station:	Result:	
13:00	0-35	117	PCF

FINES (1 per shift)

Time:	Station:	Result:	
10:40	0-35	54	%

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

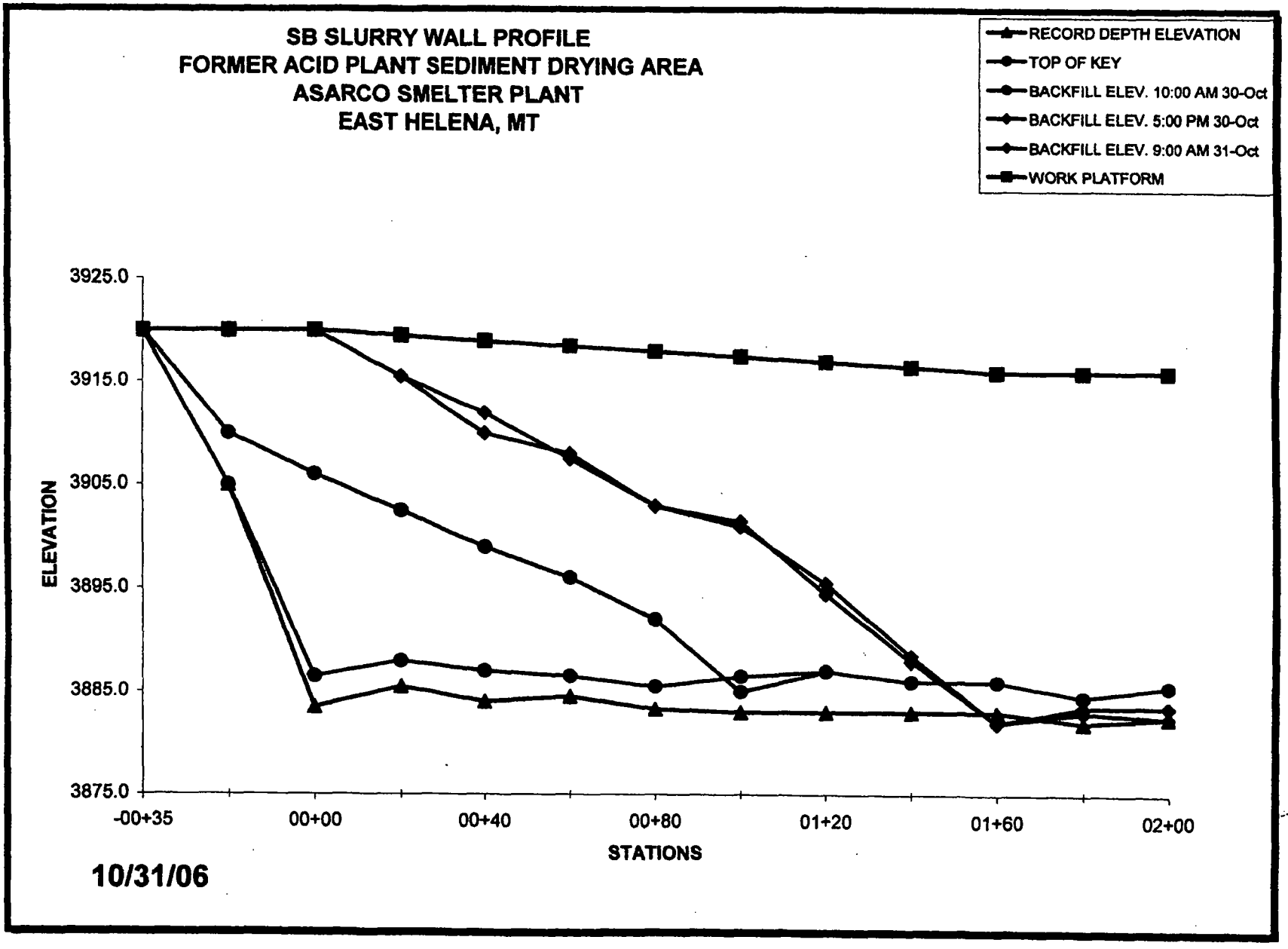
Station: 0+00

COMMENTS:

Very cold today. Temp of SB at 10:40 = 32 degrees F.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 10:00 AM 30-Oct
BACKFILL ELEV. 5:00 PM 30-Oct
BACKFILL ELEV. 9:00 AM 31-Oct
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
-00+35
00+00
00+40
00+80
01+20
01+60
02+00
STATIONS
10/31/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 31-Oct-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 10:00 AM 30-Oct FT	BACKFILL ELEV. 5:00 PM 30-Oct FT	BACKFILL ELEV. 9:00 AM 31-Oct FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 10:00 AM 30-Oct FT	BACKFILL DEPTH 5:00 PM 30-Oct FT	BACKFILL DEPTH 9:00 AM 31-Oct FT	BACKFILL AREA 10:00 AM 30-Oct SF	BACKFILL AREA 5:00 PM 30-Oct SF	BACKFILL AREA 9:00 AM 31-Oct SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3910.0	3920.0	3920.0	3920	15	15	10	0	0	25	75	75
0+00	3883.5	3886.5	3906.0	3920.0	3920.0	3920	36.5	33.5	14	0	0	343.75	643.75	643.75
0+20	3885.5	3888.0	3902.5	3916.5	3915.5	3919.5	34	31.5	17	4	4	395	665	665
0+40	3884.0	3887.0	3899.0	3912.0	3910.0	3919	35	32	20	7	9	320	580	580
0+60	3884.5	3888.5	3898.0	3907.5	3908.0	3918.5	34	32	22.5	11	10.5	285	510	495
0+80	3883.3	3885.5	3892.0	3903.0	3903.0	3918	34.7	32.5	26	15	15	202	427	432
1+00	3883.0	3886.5	3885.0	3901.0	3901.5	3917.5	34.5	31	32.5	16.5	16	107	377	382
1+20	3883.0	3887.0	3887.0	3895.5	3894.5	3917	34	30	30	21.5	22.5	60	305	300
1+40	3883.0	3886.0	3916.5	3888.5	3888.0	3916.5	33.6	30.5	0	28	28.5	0	180	165
1+60	3883.0	3886.0	3916.0	3882.0	3882.0	3916	33	30	0	34	34	0	45	40
1+80	3882.0	3884.5	3916.0	3883.0	3883.5	3916	34	31.5	0	33	32.5	0	0	5
2+00	3882.5	3885.5	3916.0	3882.5	3883.5	3916	33.5	30.5	0	33.5	32.5	0	10	25
2+20	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5				0	0	0
2+40	3882.5	3886.0	3916.0	3916.0	3916.0	3916	33.5	30				0	0	0
2+60	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5				0	0	0
2+80	3882.0	3886.0	3916.0	3916.0	3916.0	3916	34	30				0	0	0
3+00	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5				0	0	0
3+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+20	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+40	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+60	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+80	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
8+00	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
												1718 SF	3818 SF	3788 SF

Notes:

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	0+80
Toe	35	2+60
Distance =		1+80
AM Backfill Slope =		5.1

SB Backfill	Today	Todate
	2070 SF	3788 SF
	230 CY	421 CY

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 31-Oct-06

INSPECTOR: *Steven Day*, Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches)

SLURRY LEVEL: OK

VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
27-Oct	-00+35	0	0	0			Lead-in trench
27-Oct	-00+10	34	2.0	36	25	450	Lead-in trench
28-Oct	00+00	33.5	3.0	36.5	10	362.5	Lead-in trench - Corner A
28-Oct	00+10	33.5	3.0	36.5	10	365	Key material appears to be a low
28-Oct	00+20	31.5	2.5	34.0	10	352.5	permeability volcanic ash or tuff.
28-Oct	00+30	32.5	2.0	34.5	10	342.5	Color of tuff is distinctive blue-green-white
28-Oct	00+40	32	3.0	35.0	10	347.5	Key material becomes tan in color after
28-Oct	00+50	32	2.5	34.5	10	347.5	exposure (overnite) to the atmosphere
28-Oct	00+60	32	2.0	34.0	10	342.5	
28-Oct	00+70	31.5	2.5	34.0	10	340	
28-Oct	00+80	32.5	2.2	34.7	10	343.5	
28-Oct	00+90	31	2.6	33.6	10	341.5	
28-Oct	01+00	31	3.5	34.5	10	340.5	
28-Oct	01+10	30	2.7	32.7	10	336	
28-Oct	01+20	30	4.0	34.0	10	333.5	cleaned toe 10/30
30-Oct	01+30	31	3.0	34.0	10	340	
30-Oct	01+40	30.5	3.0	33.5	10	337.5	
30-Oct	01+50	30.5	2.5	33.0	10	332.5	
30-Oct	01+60	30	3.0	33.0	10	330	more concentrated debris starting here
30-Oct	01+70	30.5	2.5	33.0	10	330	debris
30-Oct	01+74	30	4.0	34.0	4	134	debris - Corner B
30-Oct	01+80	31.5	2.5	34.0	10	335	debris
30-Oct	01+90	30.5	2.5	33.0	10	335	debris
30-Oct	02+00	30.5	3.0	33.5	10	332.5	debris
31-Oct	02+10	31	2.5	33.5	10	335	
31-Oct	02+20	30.5	2.5	33.0	10	332.5	
31-Oct	02+30	30.5	2.5	33.0	10	330	
31-Oct	02+40	30	3.5	33.5	10	332.5	
31-Oct	02+50	30	3.5	33.5	10	335	
31-Oct	02+60	30.5	2.5	33.0	10	332.5	
31-Oct	02+70	30.5	4.5	35.0	10	340	
31-Oct	02+80	30	4.0	34.0	10	345	
31-Oct	02+90	29	4.0	33.0	10	335	
31-Oct	03+00	30.5	2.5	33.0	10	330	PVC and CMP pipes removed

SQ FT TODAY: 3,348

SQ FT TODATE: 11,099

COMMENTS:

Very cold. Encountered, removed and plugged 15" PVC and CMP pipes at 3+00.

Estimated plan quality = 800 lf x 35 ft = 28000 sf

% COMPLETE: 40%

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 31-Oct-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
9:00	40	SECONDS
13:20	44	

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
9:00	64.5	PCF
13:20	64.5	

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
9:00	17	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
9:00	8.5	UNITS

TEMPERATURE

TIME:	RESULT:	
9:00	40	°F

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
1+60	30	40	PCF
2+10	30	44	

DENSITY- 64 to 85 PCF
2 per shift

STA:	DEPTH:	RESULT:	
1+60	30	73	PCF
2+10	30	76	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:
Very cold. Temp of trench slurry at 9:40 = 43 degrees F.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 31-Oct-06

INSPECTOR: Steven Day
Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:
10:20	0+20	4 INCH

DENSITY (1 per shift)

Time:	Station:	Result:
10:20	0+20	116 PCF

FINES (1 per shift)

Time:	Station:	Result:
10:20	0+20	49 %

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station: 0+20

COMMENTS:

Very cold. Temp of SB at 10:20 = 32 degrees F.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 10/31/2006 — INSPECTOR: Steven Day, Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft — TARGET DRY ADDITION = 1.5 %

DATA AS OF END SHIFT

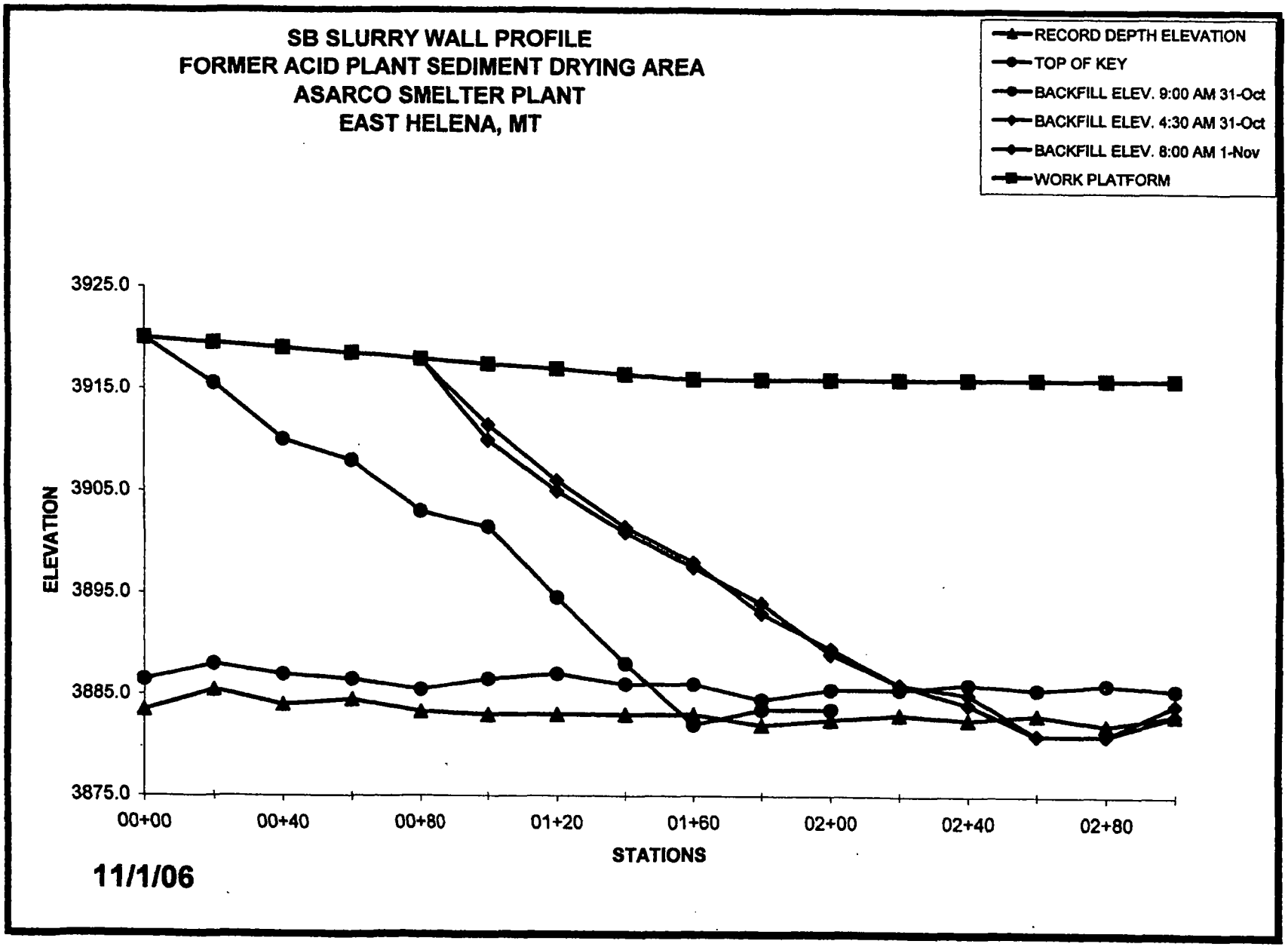
NUMBER OF BULK BAGS MIXED AND PLACED TODAY		5	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	14,000	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		2,200	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		660,000	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.121%	
NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		14	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	39,200	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		5,988	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		1,796,400	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.18%	

COMMENTS:

Estimated addition of bentonite via sluicing (based on laboratory test results) adds an additional 1 to 1.5 %

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 9:00 AM 31-Oct
BACKFILL ELEV. 4:30 AM 31-Oct
BACKFILL ELEV. 8:00 AM 1-Nov
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
00+00
00+40
00+80
01+20
01+60
02+00
02+40
02+80
STATIONS
11/1/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 1-Nov-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 9:00 AM 31-Oct FT	BACKFILL ELEV. 4:30 AM 31-Oct FT	BACKFILL ELEV. 8:00 AM 1-Nov FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 9:00 AM 31-Oct FT	BACKFILL DEPTH 4:30 AM 31-Oct FT	BACKFILL DEPTH 8:00 AM 1-Nov FT	BACKFILL AREA 9:00 AM 31-Oct SF	BACKFILL AREA 4:30 AM 31-Oct SF	BACKFILL AREA 8:00 AM 1-Nov SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3920.0	3920.0	3920.0	3920	15	15	0	0	0	75	75	75
0+00	3886.5	3886.5	3920.0	3920.0	3920.0	3920	36.5	33.5	0	0	0	643.75	643.75	643.75
0+20	3885.5	3888.0	3915.5	3919.5	3919.5	3919.5	34	31.5	4	0	0	665	705	705
0+40	3884.0	3887.0	3910.0	3919.0	3919.0	3919	35	32	9	0	0	560	690	690
0+60	3884.5	3886.5	3906.0	3918.5	3918.5	3918.5	34	32	10.5	0	0	495	690	690
0+80	3883.3	3886.5	3903.0	3918.0	3918.0	3918	34.7	32.5	15	0	0	432	687	687
1+00	3883.0	3886.5	3901.5	3911.5	3910.0	3917.5	34.5	31	16	6	7.5	382	632	617
1+20	3883.0	3887.0	3894.5	3906.0	3905.0	3917	34	30	22.5	11	12	300	515	490
1+40	3883.0	3886.0	3888.0	3901.5	3901.0	3916.5	33.5	30.5	28.5	15	15.5	165	415	400
1+60	3883.0	3886.0	3882.0	3898.0	3897.5	3916	33	30	34	18	18.5	40	335	325
1+80	3882.0	3884.5	3883.5	3893.0	3894.0	3916	34	31.5	32.5	23	22	5	260	265
2+00	3882.5	3885.5	3883.5	3889.5	3889.0	3916	33.5	30.5	32.5	26.5	27	25	180	185
2+20	3883.0	3885.5	3916.0	3886.0	3886.0	3916	33	30.5		30	30	0	100	95
2+40	3882.5	3886.0	3916.0	3885.0	3884.0	3916	33.5	30		31	32	0	55	45
2+60	3883.0	3885.5	3916.0	3881.0	3881.0	3916	33	30.5		35	35	0	5	-5
2+80	3882.0	3886.0	3916.0	3881.0	3881.0	3916	34	30		35	35	0	0	0
3+00	3883.0	3885.5	3916.0	3884.0	3883.0	3916	33	30.5		32	33	0	0	-10
3+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
3+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+20	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+40	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+60	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+80	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
8+00	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
												3788 SF	5988 SF	5898 SF

Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	0+60
Toe	35	2+60
Distance =		1+80
AM Backfill Slope =		6.1

	Today	To date
SB Backfill	2110 SF	5898 SF
	234 CY	655 CY

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 01-Nov-06

INSPECTOR: Steven Day, Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches)

SLURRY LEVEL: OK

VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
30-Oct	01+30	31	3.0	34.0	10	340	
30-Oct	01+40	30.5	3.0	33.5	10	337.5	
30-Oct	01+50	30.5	2.5	33.0	10	332.5	
30-Oct	01+60	30	3.0	33.0	10	330	more concentrated debris starting here
30-Oct	01+70	30.5	2.5	33.0	10	330	debris
30-Oct	01+74	30	4.0	34.0	4	134	debris - Corner B @ 1+74
30-Oct	01+80	31.5	2.5	34.0	6	201	debris
30-Oct	01+90	30.5	2.5	33.0	10	335	debris
30-Oct	02+00	30.5	3.0	33.5	10	332.5	debris
31-Oct	02+10	31	2.5	33.5	10	335	
31-Oct	02+20	30.5	2.5	33.0	10	332.5	
31-Oct	02+30	30.5	2.5	33.0	10	330	
31-Oct	02+40	30	3.5	33.5	10	332.5	
31-Oct	02+50	30	3.5	33.5	10	335	
31-Oct	02+60	30.5	2.5	33.0	10	332.5	
31-Oct	02+70	30.5	4.5	35.0	10	340	
31-Oct	02+80	30	4.0	34.0	10	345	
31-Oct	02+90	29	4.0	33.0	10	335	
31-Oct	03+00	30.5	2.5	33.0	10	330	PVC and CMP pipes removed
1-Nov	03+10	30.5	3	33.0	10	330	
1-Nov	03+20	30	4	34.0	10	335	
1-Nov	03+30	30.5	3	33.0	10	335	
1-Nov	03+40	30	3	33.0	10	330	
1-Nov	03+50	31	3	34.0	10	335	
1-Nov	03+55	31.5	4	35.0	5	172.5	Corner C @ 3+55
1-Nov	03+60	31	3	34.0	5	172.5	
1-Nov	03+70	31.5	3	34.0	10	340	
1-Nov	03+80	32.5	2	34.5	10	342.5	
1-Nov	03+90	31.5	2	33.5	10	340	
1-Nov	04+00	32	3	34.5	10	340	
1-Nov	04+10	30.5	3	33.0	10	337.5	
						SQ FT TODAY	3,710
						SQ FT TODATE	14,675

COMMENTS:
Very cold. Normal production.

Estimated plan quality = 800 lf x 35 ft = 28000 sf

% COMPLETE: 52%

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 1-Nov-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
8:00	41	SECONDS
11:20	43	
15:30	40	

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
8:00	65	PCF
11:20	64.5	

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
8:00	13	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
8:00	8.5	UNITS

TEMPERATURE

TIME:	RESULT:	
8:00	35	°F

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
2+20	30	50	PCF
2+90	30	42	

DENSITY- 64 to 86 PCF
2 per shift

STA:	DEPTH:	RESULT:	
2+20	30	74	PCF
2+90	30	79	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:
Very cold. Temp of trench slurry at 9:10 = 44 degrees F.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 1-Nov-06

INSPECTOR: Steven Day
Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:	
10:00	0+70	6	INCH
3:45	0+80	5.5	

DENSITY (1 per shift)

Time:	Station:	Result:	
10:00	0+70	119	PCF

FINES (1 per shift)

Time:	Station:	Result:	
10:00	0+70	47	%

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station: 0+70

COMMENTS:

Very cold. Temp of SB at 10:00 = 35 degrees F.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 11/1/2006 — INSPECTOR: Steven Day, Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft — TARGET DRY ADDITION = 1.5 %

DATA AS OF END SHIFT

NUMBER OF BULK BAGS MIXED AND PLACED TODAY		5	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	14,000	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		3,015	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		904,500	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		1.548%	

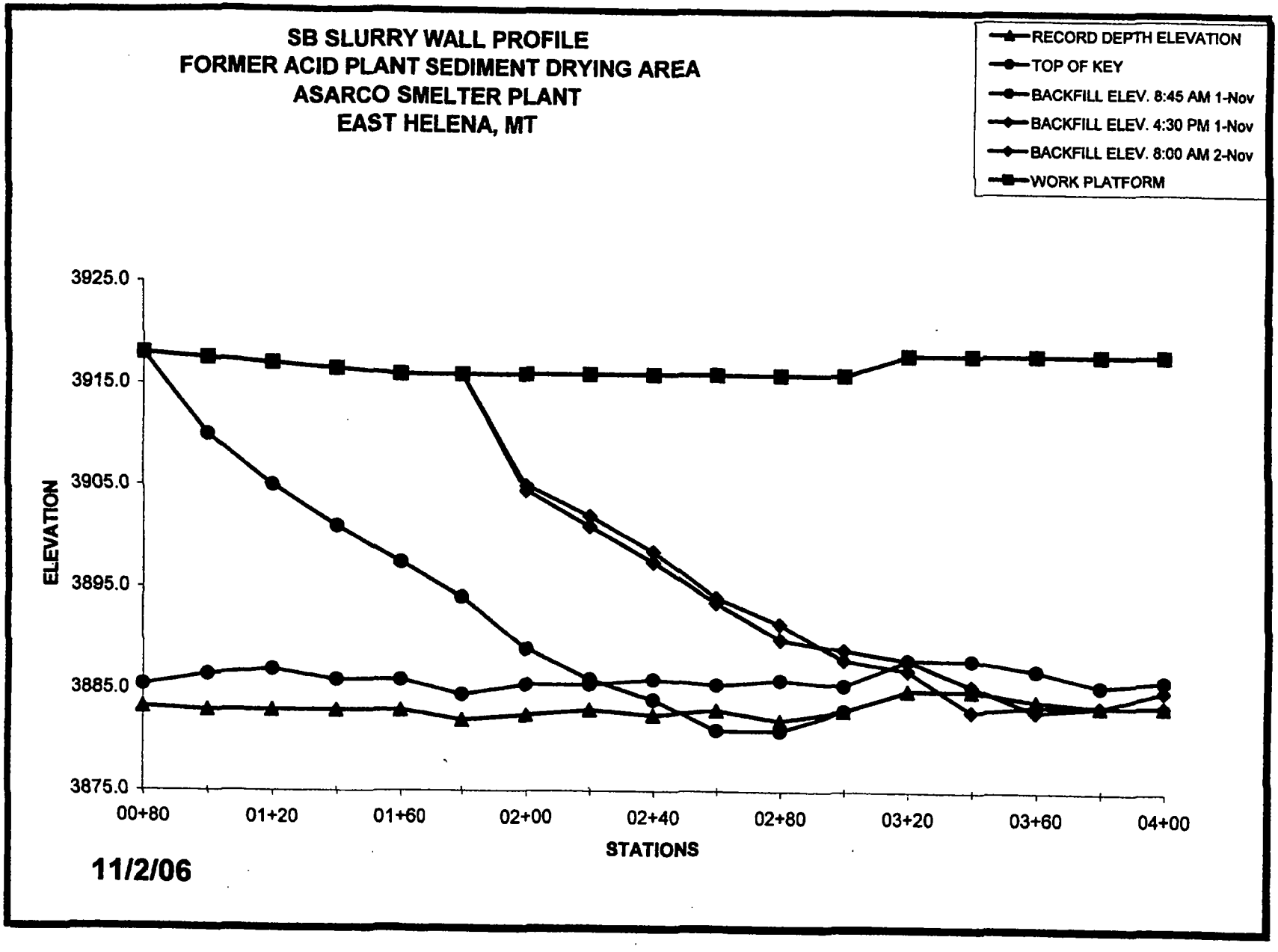
NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		19	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	53,200	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		8,883	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		2,664,900	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.00%	

COMMENTS:
Estimated addition of bentonite via sluicing (based on laboratory test results) adds an additional 1 to 1.5 %

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

BENTOCALC


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 8:45 AM 1-Nov
BACKFILL ELEV. 4:30 PM 1-Nov
BACKFILL ELEV. 8:00 AM 2-Nov
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
00+80
01+20
01+60
02+00
02+40
02+80
03+20
03+60
04+00
STATIONS
11/2/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 2-Nov-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 8:45 AM 1-Nov FT	BACKFILL ELEV. 4:30 PM 1-Nov FT	BACKFILL ELEV. 8:00 AM 2-Nov FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 8:45 AM 1-Nov FT	BACKFILL DEPTH 4:30 PM 1-Nov FT	BACKFILL DEPTH 8:00 AM 2-Nov FT	BACKFILL AREA 8:45 AM 1-Nov SF	BACKFILL AREA 4:30 PM 1-Nov SF	BACKFILL AREA 8:00 AM 2-Nov SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3920.0	3920.0	3920.0	3920	15	15	0	0	0	75	75	75
0+00	3883.5	3886.5	3920.0	3920.0	3920.0	3920	36.5	33.5	0	0	0	643.75	643.75	643.75
0+20	3885.5	3888.0	3919.5	3919.5	3919.5	3919.5	34	31.5	0	0	0	705	705	705
0+40	3884.0	3887.0	3919.0	3919.0	3919.0	3919	35	32	0	0	0	690	690	690
0+60	3884.5	3888.5	3918.5	3918.5	3918.5	3918.5	34	32	0	0	0	690	690	690
0+80	3883.3	3885.5	3918.0	3918.0	3918.0	3918	34.7	32.5	0	0	0	687	687	687
1+00	3883.0	3886.5	3910.0	3917.5	3917.5	3917.5	34.5	31	7.5	0	0	617	692	692
1+20	3883.0	3887.0	3905.0	3917.0	3917.0	3917	34	30	12	0	0	490	685	685
1+40	3883.0	3886.0	3901.0	3916.5	3916.5	3916.5	33.5	30.5	15.5	0	0	400	675	675
1+60	3883.0	3886.0	3897.5	3916.0	3916.0	3916	33	30	18.5	0	0	325	665	665
1+80	3882.0	3884.5	3894.0	3916.0	3916.0	3916	34	31.5	22	0	0	265	670	670
2+00	3882.5	3885.5	3889.0	3905.0	3904.5	3916	33.5	30.5	27	11	11.5	185	585	580
2+20	3883.0	3885.5	3886.0	3902.0	3901.0	3916	33	30.5	30	14	15	95	415	400
2+40	3882.5	3886.0	3884.0	3898.5	3897.5	3916	33.5	30	32	17.5	18.5	45	350	330
2+60	3883.0	3885.5	3881.0	3894.0	3893.5	3916	33	30.5	35	22	22.5	-5	270	255
2+80	3882.0	3886.0	3881.0	3891.5	3890.0	3916	34	30	35	24.5	26	-30	205	185
3+00	3883.0	3885.5	3883.0	3888.0	3889.0	3916	33	30.5	33	28	27	-10	145	140
3+20	3885.0	3886.0	3918.0	3887.0	3888.0	3918	33	30	0	31	30	0	70	90
3+40	3885.0	3886.0	3918.0	3883.0	3885.5	3918	33	30	0	35	32.5	0	0	35
3+60	3884.0	3887.0	3918.0	3883.5	3883.0	3918	34	31		34.5	35	0	-25	-5
3+80	3883.5	3886.5	3918.0	3883.5	3883.5	3918	34.5	32.5		34.5	34.5	0	-5	-10
4+00	3883.5	3886.0	3918.0	3885.0	3883.5	3918	34.5	32		33	34.5	0	15	0
4+20	3918.0	3918.0	3918.0	3918.0	3918.0	3918				0		0	0	0
4+40	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+60	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
4+80	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+00	3918.0	3918.0	3918.0	3918.0	3918.0	3918						0	0	0
5+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+20	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+40	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+60	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+80	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
8+00	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
												5868 SF	8883 SF	8858 SF

Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	1+80
Toe	35	3+80
Distance =		2+00
AM Backfill Slope =		5.7

SB Backfill	Today	Todate
	2990 SF	8858 SF
	332 CY	984 CY

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 02-Nov-06

INSPECTOR: Steven Day
Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches)

SLURRY LEVEL: OK

VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
31-Oct	02+10	31	2.5	33.5	10	335	
31-Oct	02+20	30.5	2.5	33.0	10	332.5	
31-Oct	02+30	30.5	2.5	33.0	10	330	
31-Oct	02+40	30	3.5	33.5	10	332.5	
31-Oct	02+50	30	3.5	33.5	10	335	
31-Oct	02+60	30.5	2.5	33.0	10	332.5	
31-Oct	02+70	30.5	4.5	35.0	10	340	
31-Oct	02+80	30	4.0	34.0	10	345	
31-Oct	02+90	29	4.0	33.0	10	335	
31-Oct	03+00	30.5	2.5	33.0	10	330	PVC and CMP pipes removed
1-Nov	03+10	30.5	2.5	33.0	10	330	
1-Nov	03+20	30	4.0	34.0	10	335	
1-Nov	03+30	30.5	2.5	33.0	10	335	
1-Nov	03+40	30	3.0	33.0	10	330	
1-Nov	03+50	31	3.0	34.0	10	335	
1-Nov	03+55	31.5	3.5	35.0	5	172.5	Corner C @ 3+55
1-Nov	03+60	31	3.0	34.0	5	172.5	
1-Nov	03+70	31.5	2.5	34.0	10	340	
1-Nov	03+80	32.5	2.0	34.5	10	342.5	
1-Nov	03+90	31.5	2.0	33.5	10	340	
1-Nov	04+00	32	2.5	34.5	10	340	
1-Nov	04+10	30.5	5.5	36.0	10	352.5	
2-Nov	04+20	32	4.0	36.0	10	360	Encountered 10" pipe at 4+25, cut & plug
2-Nov	04+30	32	3.0	35.0	10	355	
2-Nov	04+40	32.5	2.5	35.0	10	350	
2-Nov	04+50	32	2.0	34.0	10	345	
2-Nov	04+60	32	2.0	34.0	10	340	
2-Nov	04+70	31.5	2.5	34.0	10	340	
2-Nov	04+80	31	2.5	33.5	10	337.5	
2-Nov	04+90	31.5	2.5	34.0	10	337.5	
2-Nov	05+00	31	3.0	34.0	10	340	
2-Nov	05+10	31	2.5	33.5	10	337.5	

SQ FT TODAY	3,443
SQ FT TODATE	18,133

COMMENTS:
Very cold. Normal production.

Estimated plan quality = 800 lf x 35 ft = 28000 sf

% COMPLETE: 65%

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 2-Nov-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
7:45	40	SECONDS
13:50	40	
15:00	47	

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
7:45	65	PCF
13:50		

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
7:45	16	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
7:45	8.5	UNITS

TEMPERATURE

TIME:	RESULT:	
7:45	36	°F

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
3+20	30	54	SEC
3+70	30	42	

DENSITY- 64 to 85 PCF
2 per shift

STA:	DEPTH:	RESULT:	
3+20	30	72	PCF
3+70	30	83	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:

Very cold. Temp of trench slurry at 8:30 = 41 degrees F.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 2-Nov-06 — INSPECTOR: Steven Day, Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:
11:40	2+10	4.5 INCH
14:30	2+20	5

DENSITY (1 per shift)

Time:	Station:	Result:
11:40	2+10	116 PCF

FINES (1 per shift)

Time:	Station:	Result:
11:40	2+10	42 %

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station:
2+10

COMMENTS:

Very cold. Temp of SB at 11:40 = 34 degrees F.

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 11/2/2006 INSPECTOR: Steven Day, Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft TARGET DRY ADDITION = 1.5 %

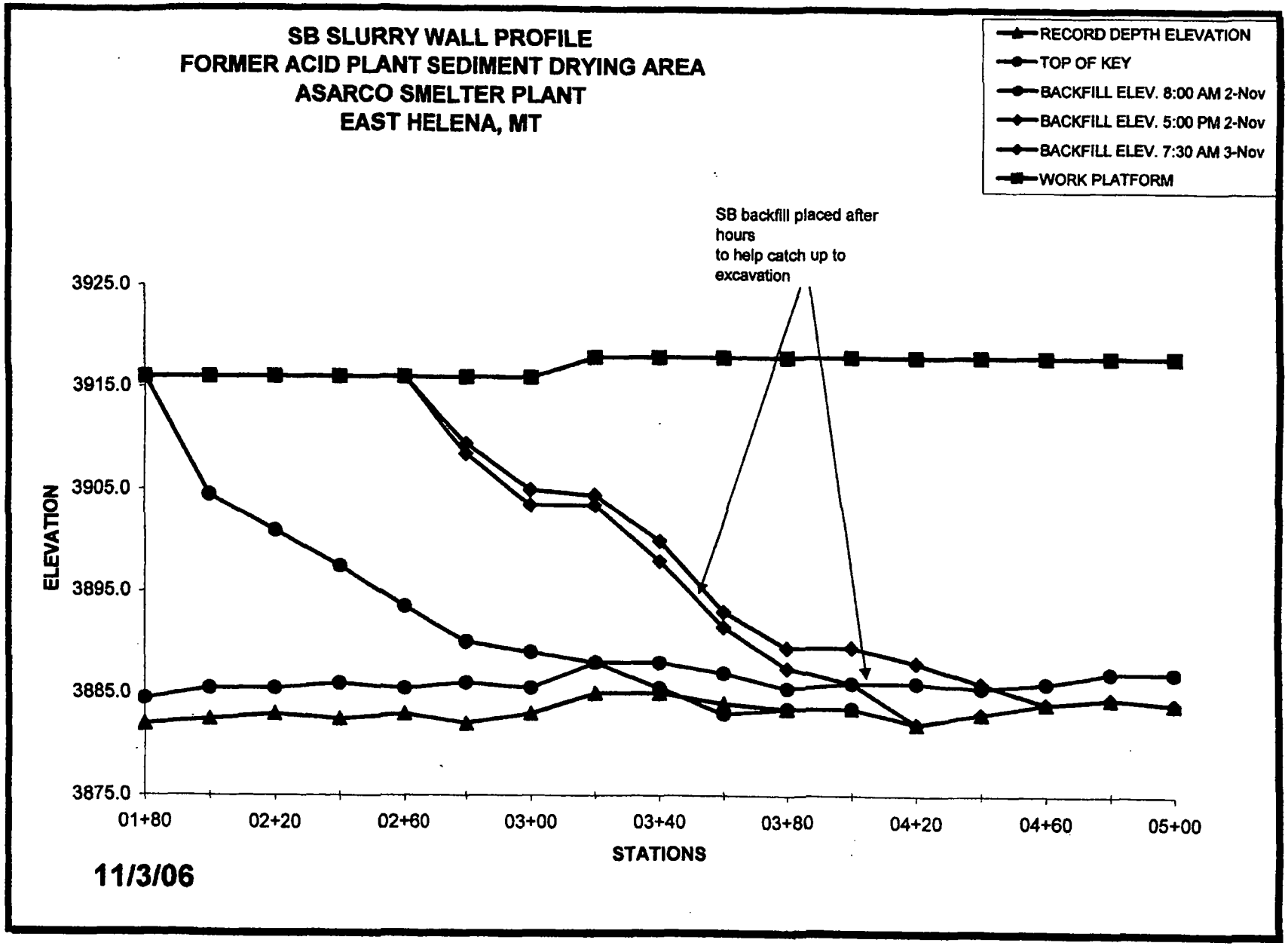
DATA AS OF END SHIFT

NUMBER OF BULK BAGS MIXED AND PLACED TODAY		6	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	16,800	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		2,870	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		861,000	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		1.951%	
NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		25	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	70,000	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		11,728	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		3,518,400	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		1.99%	

COMMENTS:
Estimated addition of bentonite via sluicing (based on laboratory test results) adds an additional 1 to 1.5 %

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 8:00 AM 2-Nov
BACKFILL ELEV. 5:00 PM 2-Nov
BACKFILL ELEV. 7:30 AM 3-Nov
WORK PLATFORM
SB backfill placed after hours
to help catch up to excavation
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
01+80
02+20
02+60
03+00
03+40
03+80
04+20
04+60
05+00
STATIONS
11/3/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 3-Nov-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 8:00 AM 2-Nov FT	BACKFILL ELEV. 5:00 PM 2-Nov FT	BACKFILL ELEV. 7:30 AM 3-Nov FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 8:00 AM 2-Nov FT	BACKFILL DEPTH 5:00 PM 2-Nov FT	BACKFILL DEPTH 7:30 AM 3-Nov FT	BACKFILL AREA 8:00 AM 2-Nov SF	BACKFILL AREA 5:00 PM 2-Nov SF	BACKFILL AREA 7:30 AM 3-Nov SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3920.0	3920.0	3920.0	3920	15	15	0	0	0	75	75	75
0+00	3883.5	3888.5	3920.0	3920.0	3920.0	3920	36.5	33.5	0	0	0	643.75	643.75	643.75
0+20	3885.5	3888.0	3919.5	3919.5	3919.5	3919.5	34	31.5	0	0	0	705	705	705
0+40	3884.0	3887.0	3919.0	3919.0	3919.0	3919	35	32	0	0	0	690	690	690
0+60	3884.5	3886.5	3918.5	3918.5	3918.5	3918.5	34	32	0	0	0	690	690	690
0+80	3883.3	3885.5	3918.0	3918.0	3918.0	3918	34.7	32.5	0	0	0	687	687	687
1+00	3883.0	3886.5	3917.5	3917.5	3917.5	3917.5	34.5	31	0	0	0	692	692	692
1+20	3883.0	3887.0	3917.0	3917.0	3917.0	3917	34	30	0	0	0	685	685	685
1+40	3883.0	3886.0	3916.5	3916.5	3916.5	3916.5	33.5	30.5	0	0	0	675	675	675
1+60	3883.0	3886.0	3916.0	3916.0	3916.0	3916	33	30	0	0	0	665	665	665
1+80	3882.0	3884.5	3916.0	3916.0	3916.0	3916	34	31.5	0	0	0	670	670	670
2+00	3882.5	3885.5	3904.5	3916.0	3916.0	3916	33.5	30.5	11.5	0	0	560	675	675
2+20	3883.0	3885.5	3901.0	3916.0	3916.0	3916	33	30.5	15	0	0	400	665	665
2+40	3882.5	3886.0	3897.5	3916.0	3916.0	3916	33.5	30	18.5	0	0	330	665	665
2+60	3883.0	3885.5	3893.5	3916.0	3916.0	3916	33	30.5	22.5	0	0	255	665	665
2+80	3882.0	3886.0	3890.0	3908.5	3909.5	3916	34	30	26	7.5	6.5	185	595	605
3+00	3883.0	3885.5	3889.0	3903.5	3905.0	3916	33	30.5	27	12.5	11	140	470	495
3+20	3885.0	3888.0	3888.0	3903.5	3904.5	3916	33	30	30	14.5	13.5	90	390	415
3+40	3885.0	3888.0	3885.5	3898.0	3900.0	3916	33	30	32.5	20	18	35	315	345
3+60	3884.0	3887.0	3883.0	3891.5	3893.0	3916	34	31	35	26.5	25	-5	205	240
3+80	3883.5	3885.5	3883.5	3887.5	3889.5	3916	34.5	32.5	34.5	30.5	28.5	-10	115	150
4+00	3883.5	3886.0	3883.5	3888.0	3889.5	3916	34.5	32	34.5	32	28.5	0	65	120
4+20	3882.0	3886.0	3916.0	3882.0	3888.0	3916	36	32		36	30	0	25	120
4+40	3883.0	3885.5	3916.0	3883.0	3888.0	3916	35	32.5		35	32	0	0	90
4+60	3884.0	3886.0	3916.0	3884.0	3884.0	3916	34	32		34	34	0	0	30
4+80	3884.5	3887.0	3916.0	3884.5	3884.5	3916	33.5	31		33.5	33.5	0	0	0
5+00	3884.0	3887.0	3916.0	3884.0	3884.0	3916	34	31		34	34	0	0	0
5+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919					0	0	0	0
5+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
5+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+20	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+40	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+60	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
6+80	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+00	3919.0	3919.0	3919.0	3919.0	3919.0	3919						0	0	0
7+20	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+40	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+60	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
7+80	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
8+00	3920.0	3920.0	3920.0	3920.0	3920.0	3920						0	0	0
												8858 SF	11728 SF	12158 SF

Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	2+60
Toe	35	4+40
Distance =		1+80
AM Backfill Slope =		6.1

SB Backfill	Today	Todate
	3300 SF	12158 SF
	367 CY	1351 CY

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 03-Nov-06 — INSPECTOR: Steven Day, Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches) — SLURRY LEVEL: OK — VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
31-Oct	02+10	31	2.5	33.5	10	335	
31-Oct	02+20	30.5	2.5	33.0	10	332.5	
31-Oct	02+30	30.5	2.5	33.0	10	330	
31-Oct	02+40	30	3.5	33.5	10	332.5	
31-Oct	02+50	30	3.5	33.5	10	335	
31-Oct	02+60	30.5	2.5	33.0	10	332.5	
31-Oct	02+70	30.5	4.5	35.0	10	340	
31-Oct	02+80	30	4.0	34.0	10	345	
31-Oct	02+90	29	4.0	33.0	10	335	
31-Oct	03+00	30.5	2.5	33.0	10	330	PVC and CMP pipes removed
1-Nov	03+10	30.5	2.5	33.0	10	330	
1-Nov	03+20	30	4.0	34.0	10	335	
1-Nov	03+30	30.5	2.5	33.0	10	335	
1-Nov	03+40	30	3.0	33.0	10	330	
1-Nov	03+50	31	3.0	34.0	10	335	
1-Nov	03+55	31.5	3.5	35.0	5	172.5	Corner C @ 3+55
1-Nov	03+60	31	3.0	34.0	5	172.5	
1-Nov	03+70	31.5	2.5	34.0	10	340	
1-Nov	03+80	32.5	2.0	34.5	10	342.5	
1-Nov	03+90	31.5	2.0	33.5	10	340	
1-Nov	04+00	32	2.5	34.5	10	340	
1-Nov	04+10	30.5	5.5	36.0	10	352.5	
2-Nov	04+20	32	4.0	36.0	10	360	Encountered 10" pipe at 4+25, cut & plug
2-Nov	04+30	32	3.0	35.0	10	355	
2-Nov	04+40	32.5	2.5	35.0	10	350	
2-Nov	04+50	32	2.0	34.0	10	345	
2-Nov	04+60	32	2.0	34.0	10	340	
2-Nov	04+70	31.5	2.5	34.0	10	340	
2-Nov	04+80	31	2.5	33.5	10	337.5	
2-Nov	04+90	31.5	2.5	34.0	10	337.5	
2-Nov	05+00	31	3.0	34.0	10	340	
2-Nov	05+10	31	2.5	33.5	10	337.5	
3-Nov	05+20	30	2.5	32.5	10	330	Debris - trench 8 ft wide
3-Nov	05+30	30	4.0	34.0	10	332.5	Debris - trench 10 ft wide
3-Nov	05+40	29.5	4.5	34.0	10	340	Debris - trench 12 ft wide
3-Nov	05+50	30	3.5	33.5	10	337.5	Debris - trench 11 ft wide
3-Nov	05+60	30	4.0	34.0	10	337.5	Debris - trench 11 ft wide

SQ FT TODAY: 1,678
SQ FT TODATE: 19,810

COMMENTS:

Limited excavation today to allow backfill to catch up. Encountered concrete and steel debris, making trench >10 ft wide.

Cleaned final 30 to 40 ft of excavation of sediment. Cleaning has been done daily.

Estimated plan quality = 800 lf x 35 ft = 28000 sf — % COMPLETE: 71%

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 3-Nov-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
9:10	45	SECONDS
14:30	40	

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
9:10	65.5	PCF
14:30	64.5	

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
9:10	15	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
9:10	8.5	UNITS

TEMPERATURE

TIME:	RESULT:	
9:10	38	°F

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
4+30	30	43	SEC
4+70	30	50	

DENSITY- 64 to 85 PCF
2 per shift

STA:	DEPTH:	RESULT:	
4+30	30	81	PCF
4+70	30	81	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:

Warming. Limited fresh slurry made in effort to help backfill catch up to excavation

Temp of trench slurry at 15:15 was 43 °F

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 3-Nov-06

INSPECTOR: Steven Day
Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:	
11:00	2+80	4.5	INCH
1:30	3+10	5	

DENSITY (1 per shift)

Time:	Station:	Result:	
11:00	2+80	121	PCF

FINES (1 per shift)

Time:	Station:	Result:	
11:00	2+80	34	%

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station:
2+80

COMMENTS:

Warming. Temp of SB at 11:00 = 35 degrees F.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

WC & FINES

SB SLURRY WALL

TEST REPORT

DATE: 03-Nov-06

INSPECTOR: Steven Day
Geo-Solutions

SAMPLE STATION: Borrow stockpile, from new stockpile

WATER CONTENT

Borrow prior to installation

A	Weight of Wet Sample and Tare:	227	[input]	
B	Weight of Tare:	7	[input]	pan
C	Weight of Wet Sample:	220	=[A-B]	
D	Weight of Dry Sample and Tare:	206 gms	[input]	same pan
E	Weight of Dry Sample:	199	=[D-B]	
F	Weight of Water	21	=[C-E]	
G	Water Content (WC) %	10.55%	=[F/E]	

FINES

Borrow prior to installation

H	Weight of Wet Sample and Tare:	269 gms	[input]	
I	Weight of Tare:	7	[input]	pan
J	Weight of Total Wet Sample	262	=[H-I]	
K	Calculated Weight of Total Dry Sample:	236.99	=[J/(1+G)]	

Wet Sieve and Apply Direct Heat

Retained Material

		1st trial	2nd trial	Final
S	Dry Material and Tare:			188

Calculations

Retained Material

T	Weight of Total Dry Sample and Tare:	188	=S
U	Weight of Tare:	7	[input]
W	Weight of Dry #200 Material:	181	=[T-U]

PERCENT PASSING

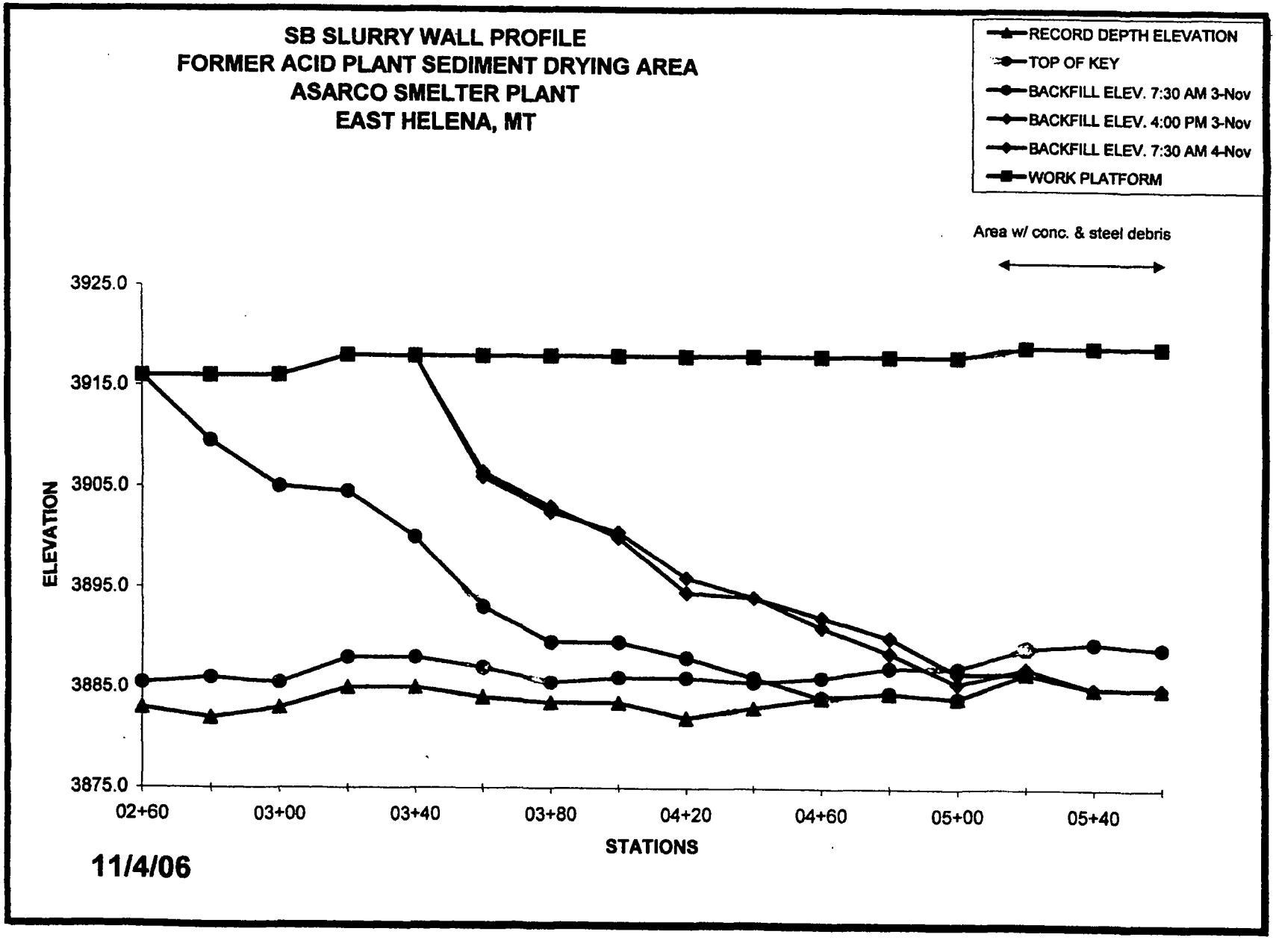
AA	Finer #200	23.6%	=[(K-W)/K]

COMMENTS:

Soil appears to be gravelly, sandy, silt.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 7:30 AM 3-Nov
BACKFILL ELEV. 4:00 PM 3-Nov
BACKFILL ELEV. 7:30 AM 4-Nov
WORK PLATFORM
Area w/ conc. & steel debris
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
02+60
03+00
03+40
03+80
04+20
04+60
05+00
05+40
STATIONS
11/4/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 11/4/2006 INSPECTOR: Steven Day
Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft TARGET DRY ADDITION = 1.5 %

DATA AS OF END SHIFT

NUMBER OF BULK BAGS MIXED AND PLACED TODAY		9	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	25,200	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		4,150	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		1,245,000	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.024%	

NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		41	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	114,800	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		18,648	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		5,594,400	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.05%	

COMMENTS:

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 4-Nov-06

INSPECTOR: Steven Day
Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:	
10:15	3+60	4.5	INCH
12:45	3+80	4.5	

DENSITY (1 per shift)

Time:	Station:	Result:	
10:15	3+60	120	PCF

FINES (1 per shift)

Time:	Station:	Result:	
10:15	3+60	42	%

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station:
3+60

COMMENTS:

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 4-Nov-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
8:20	51	SECONDS
2:20	43	

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
8:20	65	PCF
2:20	64.5	

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
8:20	15	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
8:20	8.5	UNITS

TEMPERATURE

TIME:	RESULT:	
8:20	39	°F

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
4+80	20	51	SEC
5+70	30	47	

DENSITY- 64 to 85 PCF
2 per shift

STA:	DEPTH:	RESULT:	
4+80	20	75	PCF
5+20	30	80	
5+70	30	82	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 04-Nov-06

INSPECTOR: Steven Day
Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches)

SLURRY LEVEL: OK

VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft	DEPTH TO TOP OF KEY Ft	DEPTH IN KEY (min. 2 ft) Ft	FINAL RECORD DEPTH FROM PLATFORM Ft	PANEL LENGTH Ft	EXCAVATED AREA SF	COMMENTS
1-Nov	03+10	30.5	2.5	33.0	10	330	
1-Nov	03+20	30	4.0	34.0	10	335	
1-Nov	03+30	30.5	2.5	33.0	10	335	
1-Nov	03+40	30	3.0	33.0	10	330	
1-Nov	03+50	31	3.0	34.0	10	335	
1-Nov	03+55	31.5	3.5	35.0	5	172.5	Corner C @ 3+55
1-Nov	03+60	31	3.0	34.0	5	172.5	
1-Nov	03+70	31.5	2.5	34.0	10	340	
1-Nov	03+80	32.5	2.0	34.5	10	342.5	
1-Nov	03+90	31.5	2.0	33.5	10	340	
1-Nov	04+00	32	2.5	34.5	10	340	
1-Nov	04+10	30.5	5.5	36.0	10	352.5	
2-Nov	04+20	32	4.0	36.0	10	360	Encountered 10" pipe at 4+25, cut & plugg
2-Nov	04+30	32	3.0	35.0	10	355	
2-Nov	04+40	32.5	2.5	35.0	10	350	
2-Nov	04+50	32	2.0	34.0	10	345	
2-Nov	04+60	32	2.0	34.0	10	340	
2-Nov	04+70	31.5	2.5	34.0	10	340	
2-Nov	04+80	31	2.5	33.5	10	337.5	
2-Nov	04+90	31.5	2.5	34.0	10	337.5	
2-Nov	05+00	31	3.0	34.0	10	340	
2-Nov	05+10	31	2.5	33.5	10	337.5	Debris
3-Nov	05+20	30	2.5	32.5	10	330	Debris - trench 8 ft wide
3-Nov	05+30	30	4.0	34.0	10	332.5	Debris - trench 10 ft wide
3-Nov	05+40	29.5	4.5	34.0	10	340	Debris - trench 12 ft wide
3-Nov	05+50	30	3.5	33.5	10	337.5	Debris - trench 11 ft wide
3-Nov	05+60	30	4.0	34.0	10	337.5	Debris - trench 11 ft wide
4-Nov	05+70	30.5	2.5	33.0	10	335	Debris
4-Nov	05+80	30	2.0	32.0	10	325	Debris
4-Nov	05+90	30	3.5	33.5	10	327.5	Debris
4-Nov	06+00	30.5	2.5	33.0	10	332.5	Debris - Corner C @ 6+10
4-Nov	06+10	30	3.0	33.0	10	330	
4-Nov	06+20	29.5	3.5	33.0	10	330	
4-Nov	06+30	30	3.0	33.0	10	330	
4-Nov	06+40	30.5	2.5	33.0	10	330	
4-Nov	06+50	30	2.0	32.0	10	325	
4-Nov	06+60	30	2.5	32.5	10	322.5	
4-Nov	06+70	30.5	3.5	34.0	10	332.5	

SQ FT TODAY: 3,620

SQ FT TODATE: 23,430

COMMENTS:

Debris ends at Corner C.

Cleaned final 30 to 40 ft of excavation of sediment. Cleaning has been done daily.

Estimated plan quality = 800 lf x 35 ft = 28000 sf

% COMPLETE: 84%

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw EAI QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 4-Nov-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 7:30 AM 3-Nov FT	BACKFILL ELEV. 4:00 PM 3-Nov FT	BACKFILL ELEV. 7:30 AM 4-Nov FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 7:30 AM 3-Nov FT	BACKFILL DEPTH 4:00 PM 3-Nov FT	BACKFILL DEPTH 7:30 AM 4-Nov FT	BACKFILL AREA 7:30 AM 3-Nov SF	BACKFILL AREA 4:00 PM 3-Nov SF	BACKFILL AREA 7:30 AM 4-Nov SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3920.0	3920.0	3920.0	3920	15	15	0	0	0	75	75	75
0+00	3883.5	3886.5	3920.0	3920.0	3920.0	3920	36.5	33.5	0	0	0	643.75	643.75	643.75
0+20	3885.5	3888.0	3919.5	3919.5	3919.5	3919.5	34	31.5	0	0	0	705	705	705
0+40	3884.0	3887.0	3919.0	3919.0	3919.0	3919	35	32	0	0	0	690	690	690
0+60	3884.5	3886.5	3918.5	3918.5	3918.5	3918.5	34	32	0	0	0	690	690	690
0+80	3883.3	3885.5	3918.0	3918.0	3918.0	3918	34.7	32.5	0	0	0	687	687	687
1+00	3883.0	3886.5	3917.5	3917.5	3917.5	3917.5	34.5	31	0	0	0	692	692	692
1+20	3883.0	3887.0	3917.0	3917.0	3917.0	3917	34	30	0	0	0	685	685	685
1+40	3883.0	3886.0	3916.5	3916.5	3916.5	3916.5	33.5	30.5	0	0	0	675	675	675
1+60	3883.0	3886.0	3916.0	3916.0	3916.0	3916	33	30	0	0	0	665	665	665
1+80	3882.0	3884.5	3916.0	3916.0	3916.0	3916	34	31.5	0	0	0	670	670	670
2+00	3882.5	3885.5	3916.0	3916.0	3916.0	3916	33.5	30.5	0	0	0	675	675	675
2+20	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+40	3882.5	3886.0	3916.0	3916.0	3916.0	3916	33.5	30	0	0	0	665	665	665
2+60	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+80	3882.0	3886.0	3909.5	3916.0	3916.0	3916	34	30	6.5	0	0	605	670	670
3+00	3883.0	3885.5	3905.0	3916.0	3916.0	3916	33	30.5	11	0	0	495	670	670
3+20	3885.0	3888.0	3904.5	3918.0	3918.0	3918	33	30	13.5	0	0	415	660	660
3+40	3885.0	3888.0	3900.0	3918.0	3918.0	3918	33	30	18	0	0	345	660	660
3+60	3884.0	3887.0	3893.0	3906.0	3906.5	3918	34	31	25	12	11.5	240	550	555
3+80	3883.5	3885.5	3889.5	3902.5	3903.0	3918	34.5	32.5	28.5	15.5	15	150	410	420
4+00	3883.5	3886.0	3889.5	3900.5	3900.0	3918	34.5	32	28.5	17.5	18	120	360	360
4+20	3882.0	3886.0	3888.0	3896.0	3894.5	3918	36	32	30	22	23.5	120	310	290
4+40	3883.0	3885.5	3886.0	3894.0	3894.0	3918	35	32.5	32	24	24	90	250	235
4+60	3884.0	3886.0	3884.0	3891.0	3892.0	3918	34	32	34	27	26	30	180	190
4+80	3884.5	3887.0	3884.5	3888.5	3890.0	3918	33.5	31	33.5	29.5	28	0	110	135
5+00	3884.0	3887.0	3884.0	3885.5	3886.5	3918	34	31	34	32.5	31.5	0	55	80
5+20	3886.5	3889.0		3887.0	3886.5	3919	32.5	30		32	32.5	0	20	25
5+40	3885.0	3889.5		3885.0	3885.0	3919	34	29.5		34	34	0	5	0
5+60	3885.0	3889.0		3885.0	3885.0	3919	34	30		34	34	0	0	0
5+80	3919.0	3919.0				3919						0	0	0
6+00	3919.0	3919.0				3919						0	0	0
6+20	3919.0	3919.0				3919						0	0	0
6+40	3919.0	3919.0				3919						0	0	0
6+60	3919.0	3919.0				3919						0	0	0
6+80	3919.0	3919.0				3919						0	0	0
7+00	3919.0	3919.0				3919						0	0	0
7+20	3920.0	3920.0				3920						0	0	0
7+40	3920.0	3920.0				3920						0	0	0
7+60	3920.0	3920.0				3920						0	0	0
7+80	3920.0	3920.0				3920						0	0	0
8+00	3920.0	3920.0				3920						0	0	0
												12158 SF	14458 SF	14498 SF

Notes;

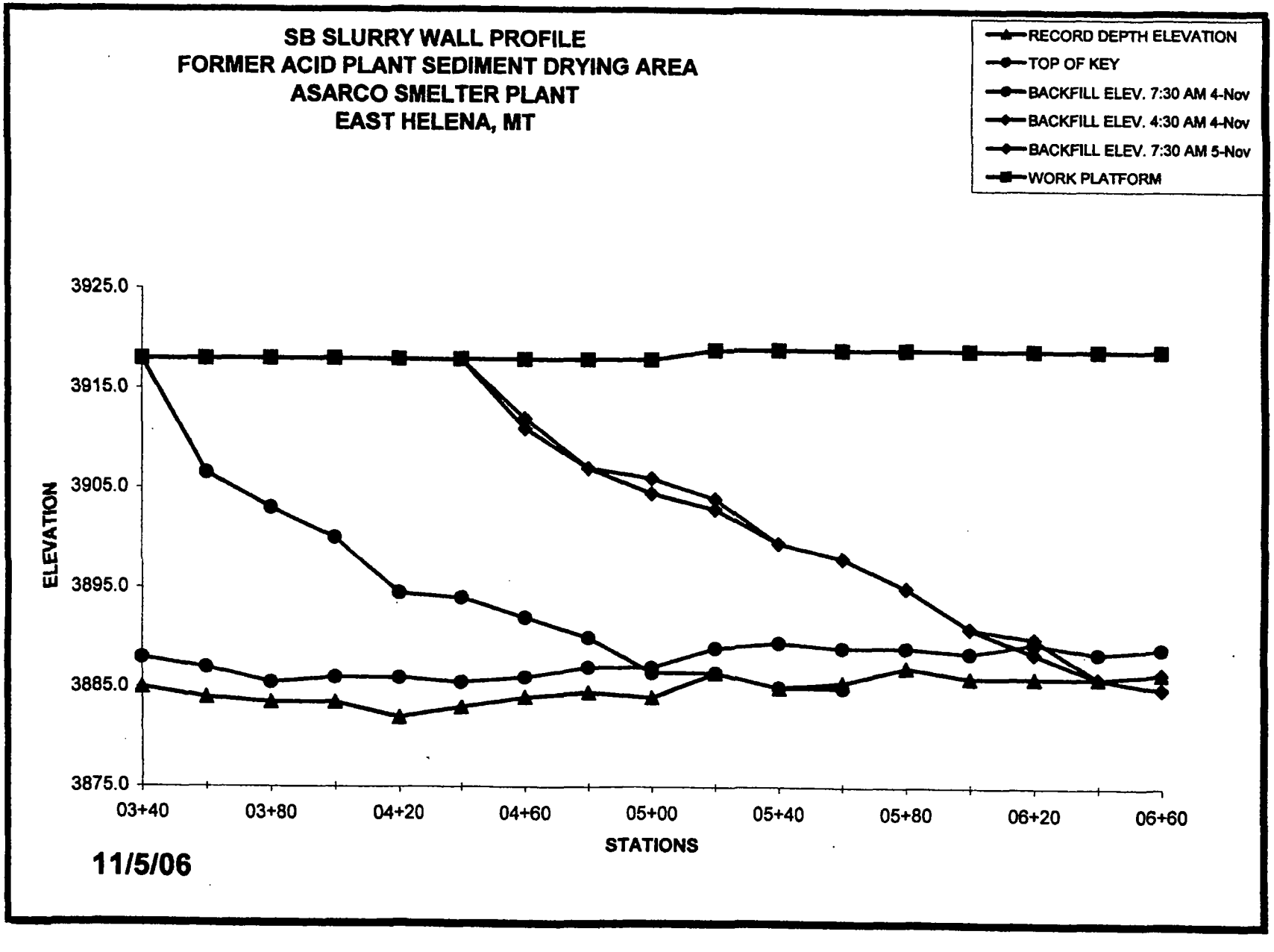
Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	3+80
Toe	35	5+20
Distance =		1+60
AM Backfill Slope =		4.6

SB Backfill	Today	Todate
	2340 SF	14498 SF
	260 CY	1611 CY

Batch placed after hours 4

CHART DATA


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 7:30 AM 4-Nov
BACKFILL ELEV. 4:30 AM 4-Nov
BACKFILL ELEV. 7:30 AM 5-Nov
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
03+40
03+80
04+20
04+60
05+00
05+40
05+80
06+20
06+60
STATIONS
11/5/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 5-Nov-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 7:30 AM 4-Nov FT	BACKFILL ELEV. 4:30 AM 4-Nov FT	BACKFILL ELEV. 7:30 AM 5-Nov FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 7:30 AM 4-Nov FT	BACKFILL DEPTH 4:30 AM 4-Nov FT	BACKFILL DEPTH 7:30 AM 5-Nov FT	BACKFILL AREA 7:30 AM 4-Nov SF	BACKFILL AREA 4:30 AM 4-Nov SF	BACKFILL AREA 7:30 AM 5-Nov SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3920.0	3920.0	3920.0	3920	15	15	0	0	0	75	75	75
0+00	3883.5	3886.5	3920.0	3920.0	3920.0	3920	36.5	33.5	0	0	0	643.75	643.75	643.75
0+20	3885.5	3888.0	3919.5	3919.5	3919.5	3919.5	34	31.5	0	0	0	705	705	705
0+40	3884.0	3887.0	3919.0	3919.0	3919.0	3919	35	32	0	0	0	690	690	690
0+60	3884.5	3886.5	3918.5	3918.5	3918.5	3918.5	34	32	0	0	0	690	690	690
0+80	3883.3	3885.5	3918.0	3918.0	3918.0	3918	34.7	32.5	0	0	0	687	687	687
1+00	3883.0	3886.5	3917.5	3917.5	3917.5	3917.5	34.5	31	0	0	0	692	692	692
1+20	3883.0	3887.0	3917.0	3917.0	3917.0	3917	34	30	0	0	0	685	685	685
1+40	3883.0	3886.0	3916.5	3916.5	3916.5	3916.5	33.5	30.5	0	0	0	675	675	675
1+60	3883.0	3886.0	3916.0	3916.0	3916.0	3916	33	30	0	0	0	665	665	665
1+80	3882.0	3884.5	3916.0	3916.0	3916.0	3916	34	31.5	0	0	0	670	670	670
2+00	3882.5	3885.5	3916.0	3916.0	3916.0	3916	33.5	30.5	0	0	0	675	675	675
2+20	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+40	3882.5	3886.0	3916.0	3916.0	3916.0	3916	33.5	30	0	0	0	665	665	665
2+60	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+80	3882.0	3886.0	3916.0	3916.0	3916.0	3916	34	30	0	0	0	670	670	670
3+00	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	670	670	670
3+20	3885.0	3888.0	3918.0	3918.0	3918.0	3918	33	30	0	0	0	660	660	660
3+40	3885.0	3888.0	3918.0	3918.0	3918.0	3918	33	30	0	0	0	660	660	660
3+60	3884.0	3887.0	3908.5	3918.0	3918.0	3918	34	31	11.5	0	0	555	670	670
3+80	3883.5	3885.5	3903.0	3918.0	3918.0	3918	34.5	32.5	15	0	0	420	685	685
4+00	3883.5	3886.0	3900.0	3918.0	3918.0	3918	34.5	32	18	0	0	360	690	690
4+20	3882.0	3886.0	3894.5	3918.0	3918.0	3918	36	32	23.5	0	0	290	705	705
4+40	3883.0	3885.5	3894.0	3918.0	3918.0	3918	35	32.5	24	0	0	235	710	710
4+60	3884.0	3886.0	3892.0	3912.0	3911.0	3918	34	32	26	6	7	190	630	620
4+80	3884.5	3887.0	3890.0	3907.0	3907.0	3918	33.5	31	28	11	11	135	505	495
5+00	3884.0	3887.0	3888.5	3906.0	3904.5	3918	34	31	31.5	12	13.5	80	445	430
5+20	3886.5	3889.0	3886.5	3904.0	3903.0	3919	32.5	30	32.5	15	16	25	395	370
5+40	3885.0	3889.5	3885.0	3899.5	3899.5	3919	34	29.5	34	19.5	19.5	0	320	310
5+60	3885.5	3889.0	3885.0	3898.0	3898.0	3919	33.5	30	34	21	21	0	270	270
5+80	3887.0	3889.0		3895.0	3895.0	3919	32	30		24	24	0	205	205
6+00	3886.0	3888.5		3891.0	3891.0	3919	33	30.5		28	28	0	130	130
6+20	3888.0	3889.5		3890.0	3888.5	3919	33	29.5		29	30.5	0	90	75
6+40	3888.0	3888.5		3886.0	3888.0	3919	33	30.5		33	33	0	40	25
6+60	3886.5	3889.0		3886.5	3885.0	3919	32.5	30		32.5	34	0	0	-15
6+80	3919.0	3919.0		3919.0	3919.0	3919						0	0	0
7+00	3919.0	3919.0				3919						0	0	0
7+20	3920.0	3920.0				3920						0	0	0
7+40	3920.0	3920.0				3920						0	0	0
7+60	3920.0	3920.0				3920						0	0	0
7+80	3920.0	3920.0				3920						0	0	0
8+00	3920.0	3920.0				3920						0	0	0
												14498 SF	18698 SF	18583 SF

Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	4+40
Toe	33	6+40
Distance =		2+00
AM Backfill Slope =		6.1

SB Backfill	Today	Todate
	4085 SF	18583 SF
	454 CY	2065 CY

Batch placed after hours -13

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 05-Nov-06

INSPECTOR: Steven Day, Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches)

SLURRY LEVEL: OK

VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
2-Nov	04+20	32	4.0	36.0	10	360	Encountered 10" pipe at 4+25, cut & plug
2-Nov	04+30	32	3.0	35.0	10	355	
2-Nov	04+40	32.5	2.5	35.0	10	350	
2-Nov	04+50	32	2.0	34.0	10	345	
2-Nov	04+60	32	2.0	34.0	10	340	
2-Nov	04+70	31.5	2.5	34.0	10	340	
2-Nov	04+80	31	2.5	33.5	10	337.5	
2-Nov	04+90	31.5	2.5	34.0	10	337.5	
2-Nov	05+00	31	3.0	34.0	10	340	
2-Nov	05+10	31	2.5	33.5	10	337.5	Debris
3-Nov	05+20	30	2.5	32.5	10	330	Debris - trench 8 ft wide
3-Nov	05+30	30	4.0	34.0	10	332.5	Debris - trench 10 ft wide
3-Nov	05+40	29.5	4.5	34.0	10	340	Debris - trench 12 ft wide
3-Nov	05+50	30	3.5	33.5	10	337.5	Debris - trench 11 ft wide
3-Nov	05+60	30	4.0	34.0	10	337.5	Debris - trench 11 ft wide
4-Nov	05+70	30.5	2.5	33.0	10	335	Debris
4-Nov	05+80	30	2.0	32.0	10	325	Debris
4-Nov	05+90	30	3.5	33.5	10	327.5	Debris
4-Nov	06+00	30.5	2.5	33.0	10	332.5	Debris - Corner C @ 6+10
4-Nov	06+10	30	3.0	33.0	10	330	
4-Nov	06+20	29.5	3.5	33.0	10	330	
4-Nov	06+30	30	3.0	33.0	10	330	
4-Nov	06+40	30.5	2.5	33.0	10	330	
4-Nov	06+50	30	2.0	32.0	10	325	
4-Nov	06+60	30	2.5	32.5	10	322.5	
4-Nov	06+70	30.5	3.5	34.0	10	332.5	
5-Nov	06+80	31	3.0	34.0	10	340	Cleaned toe of bfill @ AM
5-Nov	06+90	31	2.5	33.5	10	337.5	
5-Nov	07+00	32.5	2.5	35.0	10	342.5	
5-Nov	07+10	32	2.5	34.5	10	347.5	
	07+20						
	07+30						
	07+40						
	07+50						
	07+60						
	07+70						
	07+80						
	07+90						
	08+00						
	08+10						
	08+20						

SQ FT TODAY	1,368
SQ FT TODATE	24,798

COMMENTS:

Cleaned toe of bfill in am to Corner C. Worked only 1/2 day today.

Estimated plan quality = 800 lf x 35 ft = 28000 sf

% COMPLETE: 89%

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 5-Nov-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
8:00	43	SECONDS
11:20	40	

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
8:00	64.5	PCF
11:20	64.5	

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
8:00	16	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
8:00	8.5	UNITS

TEMPERATURE

TIME:	RESULT:	
8:00	41	°F

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
6+40	30	41	SEC
6+80	30	42	

DENSITY- 64 to 85 PCF
2 per shift

STA:	DEPTH:	RESULT:	
6+40	30	79	PCF
6+80	30	79	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 5-Nov-06 — INSPECTOR: Steven Day, Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:	
8:15	4+60	5	INCH
11:50	5+20	6	

DENSITY (1 per shift)

Time:	Station:	Result:	
8:15	4+60	122	PCF

FINES (1 per shift)

Time:	Station:	Result:	
8:15	4+60	36	%

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station:
4+60
5+20

COMMENTS:

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 11/5/2006 INSPECTOR: Steven Day
Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft TARGET DRY ADDITION = 1.5 %

DATA AS OF END SHIFT

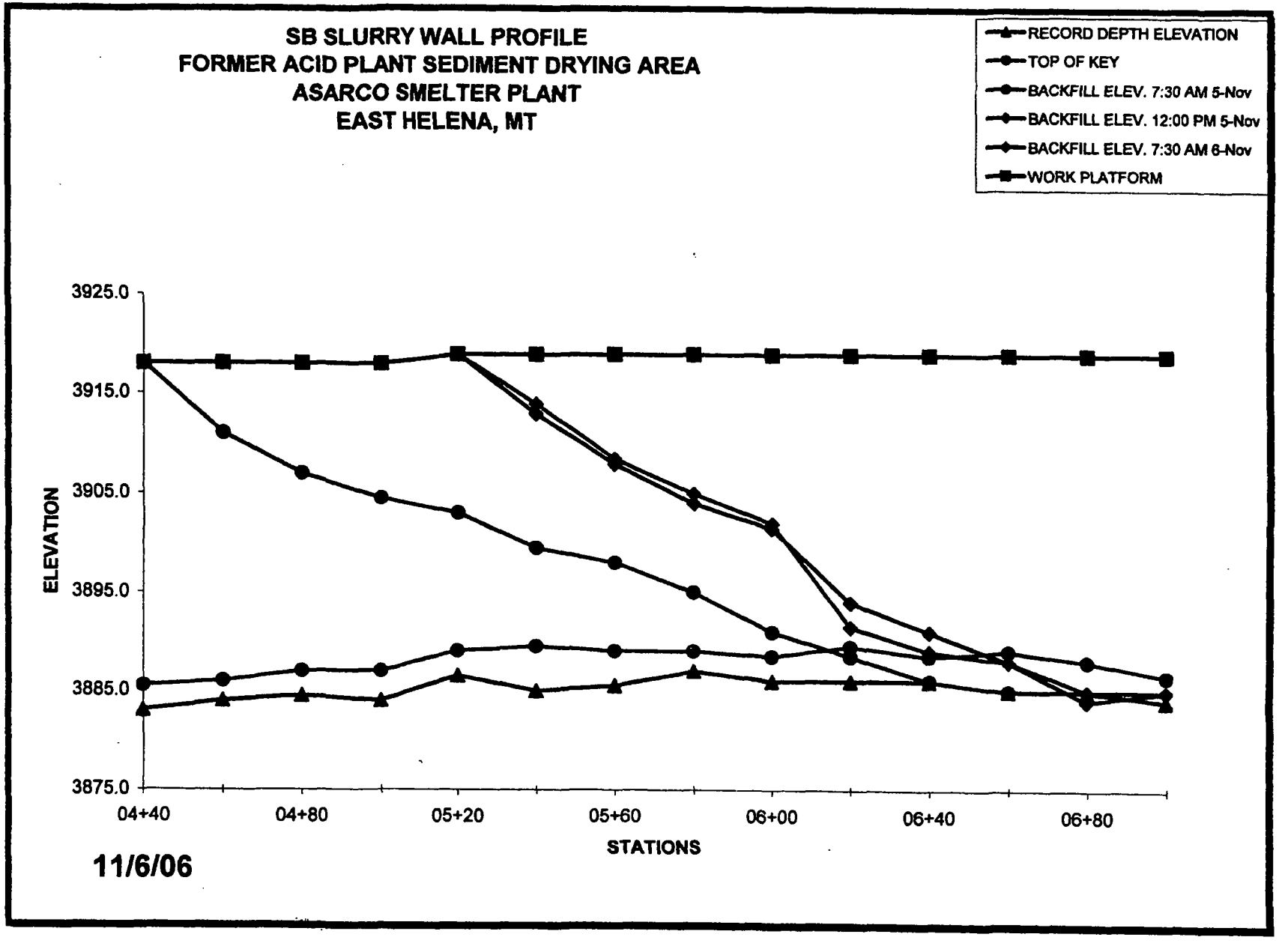
NUMBER OF BULK BAGS MIXED AND PLACED TODAY		5	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	14,000	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		2,070	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		621,000	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.254%	

NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		46	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	128,800	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		20,668	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		6,200,400	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.08%	

COMMENTS:

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 7:30 AM 5-Nov
BACKFILL ELEV. 12:00 PM 5-Nov
BACKFILL ELEV. 7:30 AM 6-Nov
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
04+40
04+80
05+20
05+60
06+00
06+40
06+80
STATIONS
11/6/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 6-Nov-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 7:30 AM 5-Nov FT	BACKFILL ELEV. 12:00 PM 5-Nov FT	BACKFILL ELEV. 7:30 AM 6-Nov FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 7:30 AM 5-Nov FT	BACKFILL DEPTH 12:00 PM 5-Nov FT	BACKFILL DEPTH 7:30 AM 6-Nov FT	BACKFILL AREA 7:30 AM 5-Nov SF	BACKFILL AREA 12:00 PM 5-Nov SF	BACKFILL AREA 7:30 AM 6-Nov SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3920.0	3920.0	3920.0	3920	15	15	0	0	0	75	75	75
0+00	3883.5	3886.5	3920.0	3920.0	3920.0	3920	36.5	33.5	0	0	0	643.75	643.75	643.75
0+20	3885.5	3888.0	3919.5	3919.5	3919.5	3919.5	34	31.5	0	0	0	705	705	705
0+40	3884.0	3887.0	3919.0	3919.0	3919.0	3919	35	32	0	0	0	690	690	690
0+60	3884.5	3886.5	3918.5	3918.5	3918.5	3918.5	34	32	0	0	0	690	690	690
0+80	3883.3	3885.5	3918.0	3918.0	3918.0	3918	34.7	32.5	0	0	0	687	687	687
1+00	3883.0	3886.5	3917.5	3917.5	3917.5	3917.5	34.5	31	0	0	0	692	692	692
1+20	3883.0	3887.0	3917.0	3917.0	3917.0	3917	34	30	0	0	0	685	685	685
1+40	3883.0	3886.0	3916.5	3916.5	3916.5	3916.5	33.5	30.5	0	0	0	675	675	675
1+60	3883.0	3886.0	3916.0	3916.0	3916.0	3916	33	30	0	0	0	665	665	665
1+80	3882.0	3884.5	3916.0	3916.0	3916.0	3916	34	31.5	0	0	0	670	670	670
2+00	3882.5	3885.5	3916.0	3916.0	3916.0	3916	33.5	30.5	0	0	0	675	675	675
2+20	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+40	3882.5	3886.0	3916.0	3916.0	3916.0	3916	33.5	30	0	0	0	665	665	665
2+60	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+80	3882.0	3886.0	3916.0	3916.0	3916.0	3916	34	30	0	0	0	670	670	670
3+00	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	670	670	670
3+20	3885.0	3888.0	3918.0	3918.0	3918.0	3918	33	30	0	0	0	680	680	680
3+40	3885.0	3888.0	3918.0	3918.0	3918.0	3918	33	30	0	0	0	680	680	680
3+60	3884.0	3887.0	3918.0	3918.0	3918.0	3918	34	31	0	0	0	670	670	670
3+80	3883.5	3885.5	3918.0	3918.0	3918.0	3918	34.5	32.5	0	0	0	685	685	685
4+00	3883.5	3886.0	3918.0	3918.0	3918.0	3918	34.5	32	0	0	0	690	690	690
4+20	3882.0	3886.0	3918.0	3918.0	3918.0	3918	36	32	0	0	0	705	705	705
4+40	3883.0	3885.5	3918.0	3918.0	3918.0	3918	35	32.5	0	0	0	710	710	710
4+60	3884.0	3888.0	3911.0	3918.0	3918.0	3918	34	32	7	0	0	620	690	690
4+80	3884.5	3887.0	3907.0	3918.0	3918.0	3918	33.5	31	11	0	0	495	675	675
5+00	3884.0	3887.0	3904.5	3918.0	3918.0	3918	34	31	13.5	0	0	430	675	675
5+20	3886.5	3889.0	3903.0	3919.0	3919.0	3919	32.5	30	16	0	0	370	665	665
5+40	3885.0	3889.5	3899.5	3914.0	3913.0	3919	34	29.5	19.5	5	6	310	615	605
5+60	3885.5	3889.0	3898.0	3908.5	3908.0	3919	33.5	30	21	10.5	11	270	520	505
5+80	3887.0	3889.0	3895.0	3905.0	3904.0	3919	32	30	24	14	15	205	410	395
6+00	3886.0	3888.5	3891.0	3902.0	3901.5	3919	33	30.5	28	17	17.5	130	340	326
6+20	3886.0	3889.5	3888.5	3891.5	3894.0	3919	33	29.5	30.5	27.5	25	75	215	235
6+40	3886.0	3888.5	3886.0	3889.0	3891.0	3919	33	30.5	33	30	28	25	85	130
6+60	3885.0	3889.0	3885.0	3888.0	3888.0	3919	34	30	34	31	31	0	60	80
6+80	3885.0	3888.0		3885.0	3884.0	3919	34	31		34	35	0	30	20
7+00	3884.0	3886.5		3885.0	3885.0	3919	35	32.5		34	34	0	10	0
7+20	3920.0	3920.0		3920.0	3920.0	3920	0	0		0	0	0	10	10
7+40	3920.0	3920.0				3920						0	0	0
7+60	3920.0	3920.0				3920						0	0	0
7+80	3920.0	3920.0				3920						0	0	0
8+00	3920.0	3920.0				3920						0	0	0
												18598 SF	20868 SF	20678 SF

Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	5+20
Toe	34	7+00
Distance =		1+80
AM Backfill Slope =		5.3

SB Backfill	Today	Todate
	2080 SF	20678 SF
	231 CY	2298 CY

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 06-Nov-06 — INSPECTOR: Steven Day, Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches) — SLURRY LEVEL: OK — VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
2-Nov	04+20	32	4.0	36.0	10	360	Encountered 10" pipe at 4+25, cut & plugg
2-Nov	04+30	32	3.0	35.0	10	355	
2-Nov	04+40	32.5	2.5	35.0	10	350	
2-Nov	04+50	32	2.0	34.0	10	345	
2-Nov	04+60	32	2.0	34.0	10	340	
2-Nov	04+70	31.5	2.5	34.0	10	340	
2-Nov	04+80	31	2.5	33.5	10	337.5	
2-Nov	04+90	31.5	2.5	34.0	10	337.5	
2-Nov	05+00	31	3.0	34.0	10	340	
2-Nov	05+10	31	2.5	33.5	10	337.5	Debris
3-Nov	05+20	30	2.5	32.5	10	330	Debris - trench 8 ft wide
3-Nov	05+30	30	4.0	34.0	10	332.5	Debris - trench 10 ft wide
3-Nov	05+40	29.5	4.5	34.0	10	340	Debris - trench 12 ft wide
3-Nov	05+50	30	3.5	33.5	10	337.5	Debris - trench 11 ft wide
3-Nov	05+60	30	4.0	34.0	10	337.5	Debris - trench 11 ft wide
4-Nov	05+70	30.5	2.5	33.0	10	335	Debris
4-Nov	05+80	30	2.0	32.0	10	325	Debris
4-Nov	05+90	30	3.5	33.5	10	327.5	Debris
4-Nov	06+00	30.5	2.5	33.0	10	332.5	Debris - Corner C @ 6+10
4-Nov	06+10	30	3.0	33.0	10	330	
4-Nov	06+20	29.5	3.5	33.0	10	330	
4-Nov	06+30	30	3.0	33.0	10	330	
4-Nov	06+40	30.5	2.5	33.0	10	330	
4-Nov	06+50	30	2.0	32.0	10	325	
4-Nov	06+60	30	2.5	32.5	10	322.5	
4-Nov	06+70	30.5	3.5	34.0	10	332.5	
5-Nov	06+80	31	3.0	34.0	10	340	Cleaned toe of bfill @ AM to Corner
5-Nov	06+90	31	2.5	33.5	10	337.5	
5-Nov	07+00	32.5	2.5	35.0	10	342.5	
5-Nov	07+10	32	2.5	34.5	10	347.5	
6-Nov	07+20	32.5	2.5	35.0	10	347.5	Cleaned toe of bfill @ AM to 6+60
6-Nov	07+30	33	2.0	35.0	10	350	
6-Nov	07+40	33	2.5	35.5	10	352.5	
6-Nov	07+50	33	2.0	35.0	10	352.5	
6-Nov	07+60	32.5	2.5	35.0	10	350	
6-Nov	07+70	33	2.5	35.5	10	352.5	
6-Nov	07+80	34	2.0	36.0	10	357.5	
6-Nov	07+90	34	2.5	36.5	10	362.5	
	08+00						
	08+10						
	08+20						

SQ FT TODAY: 2,825
SQ FT TODATE: 27,623

COMMENTS:
Cleaned toe of backfill to 6+80.
Slowed excavation to match progress of backfill.

Estimated plan quality = 800 lf x 35 ft = 28000 sf — % COMPLETE: 99%

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 6-Nov-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS

2 per shift

TIME	RESULT	
8:00	40	SECONDS
8:25	42	

DENSITY- MINIMUM 64 PCF

2 per shift

TIME	RESULT	
8:00	64	PCF
8:25	64.5	

FILTRATE - MAXIMUM 30 CC

1 per truckload

TIME	RESULT	
8:20	18	CC

pH > 7 UNITS

1 per shift

TIME	RESULT	
8:20	8.5	UNITS

TEMPERATURE

TIME	RESULT	
8:20	44	°F

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS

2 per shift

STA	DEPTH	RESULT	
6+40	20	40	SEC
7+20	30	47	

DENSITY- 64 to 85 PCF

2 per shift

STA	DEPTH	RESULT	
6+40	20	84	PCF
7+00	30	80	
7+20	30	84	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME	RESULT	
9:15	6.6	UNITS

HARDNESS

TIME	RESULT	
9:15	120	PPM

TDS

TIME	RESULT	
9:15	<500	PPM

COMMENTS:

End of fresh slurry production and end of fresh slurry testing. Tested filtrate of each truckload.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 6-Nov-06

INSPECTOR: Steven Day
Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:
1:20	5+90	6 INCH

DENSITY (1 per shift)

Time:	Station:	Result:
1:20	5+90	120 PCF

FINES (1 per shift)

Time:	Station:	Result:
1:20	5+90	33 %

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station: 5+90

COMMENTS:

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 11/6/2006 INSPECTOR: Steven Day, Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft TARGET DRY ADDITION = 1.5 %

DATA AS OF END SHIFT

NUMBER OF BULK BAGS MIXED AND PLACED TODAY		10	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	28,000	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		3,280	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		984,000	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.846%	

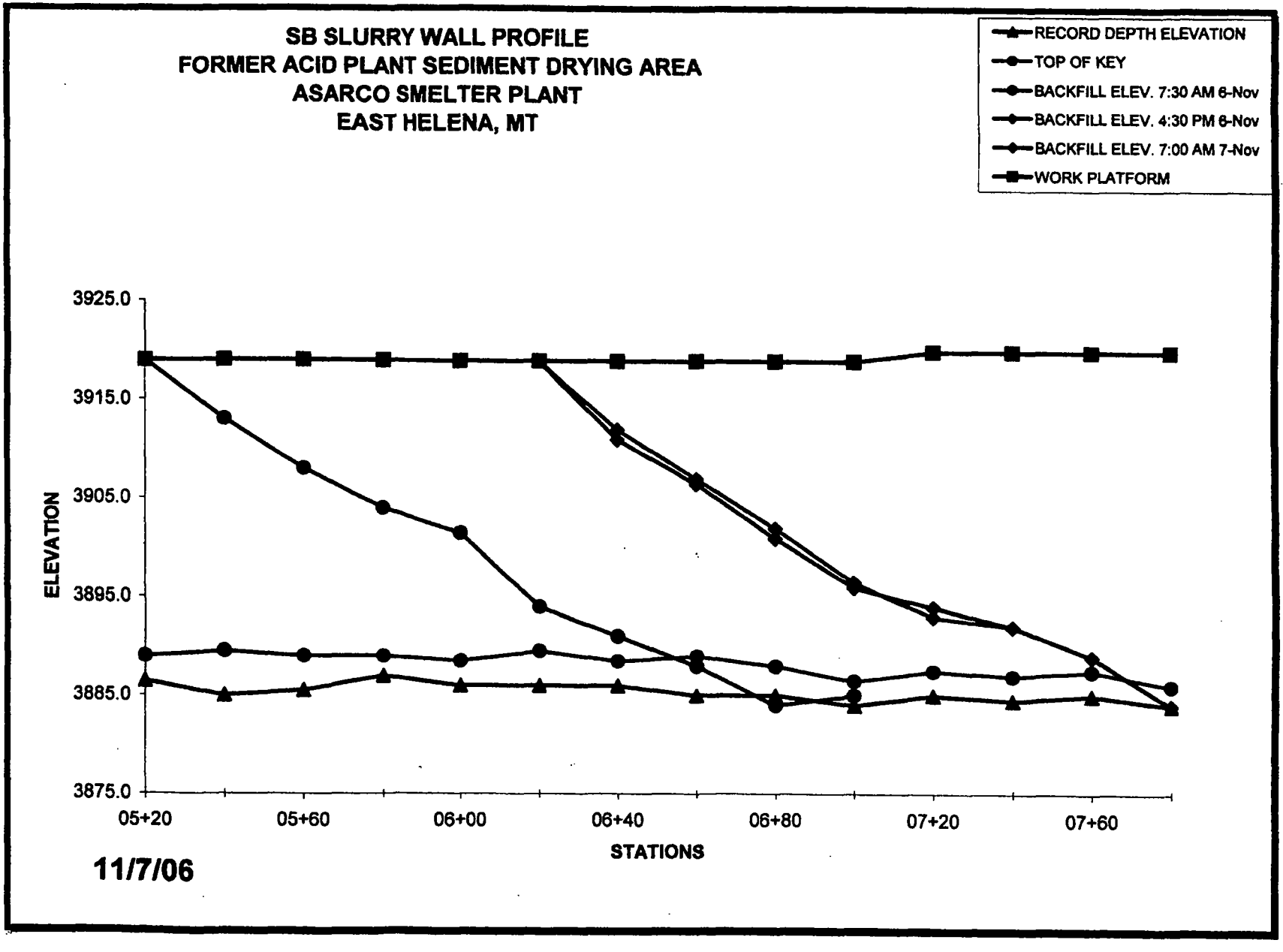
NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		56	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	156,800	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		23,948	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		7,184,400	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.18%	

COMMENTS:

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

BENTOCALC


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 7:30 AM 6-Nov
BACKFILL ELEV. 4:30 PM 6-Nov
BACKFILL ELEV. 7:00 AM 7-Nov
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
05+20
05+60
06+00
06+40
06+80
07+20
07+60
STATIONS
11/7/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

Trench Width = 3.00 ft

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 7-Nov-06

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 7:30 AM 6-Nov FT	BACKFILL ELEV. 4:30 PM 6-Nov FT	BACKFILL ELEV. 7:00 AM 7-Nov FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 7:30 AM 6-Nov FT	BACKFILL DEPTH 4:30 PM 6-Nov FT	BACKFILL DEPTH 7:00 AM 7-Nov FT	BACKFILL AREA 7:30 AM 6-Nov SF	BACKFILL AREA 4:30 PM 6-Nov SF	BACKFILL AREA 7:00 AM 7-Nov SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3906.0	3905.0	3920.0	3920.0	3920.0	3920	15	15	0	0	0	75	75	75
0+00	3883.5	3886.5	3920.0	3920.0	3920.0	3920	36.5	33.5	0	0	0	643.75	643.75	643.75
0+20	3885.5	3888.0	3919.5	3919.5	3919.5	3919.5	34	31.5	0	0	0	705	705	705
0+40	3884.0	3887.0	3919.0	3919.0	3919.0	3919	35	32	0	0	0	690	690	690
0+60	3884.5	3886.5	3918.5	3918.5	3918.5	3918.5	34	32	0	0	0	690	690	690
0+80	3883.3	3885.5	3918.0	3918.0	3918.0	3918	34.7	32.5	0	0	0	687	687	687
1+00	3883.0	3886.5	3917.5	3917.5	3917.5	3917.5	34.5	31	0	0	0	692	692	692
1+20	3883.0	3887.0	3917.0	3917.0	3917.0	3917	34	30	0	0	0	685	685	685
1+40	3883.0	3886.0	3916.5	3916.5	3916.5	3916.5	33.5	30.5	0	0	0	675	675	675
1+60	3883.0	3886.0	3916.0	3916.0	3916.0	3916	33	30	0	0	0	665	665	665
1+80	3882.0	3884.5	3916.0	3916.0	3916.0	3916	34	31.5	0	0	0	670	670	670
2+00	3882.5	3885.5	3916.0	3916.0	3916.0	3916	33.5	30.5	0	0	0	675	675	675
2+20	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+40	3882.5	3886.0	3916.0	3916.0	3916.0	3916	33.5	30	0	0	0	665	665	665
2+60	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+80	3882.0	3886.0	3916.0	3916.0	3916.0	3916	34	30	0	0	0	670	670	670
3+00	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	670	670	670
3+20	3885.0	3888.0	3918.0	3918.0	3918.0	3918	33	30	0	0	0	660	660	660
3+40	3885.0	3888.0	3918.0	3918.0	3918.0	3918	33	30	0	0	0	660	660	660
3+60	3884.0	3887.0	3918.0	3918.0	3918.0	3918	34	31	0	0	0	670	670	670
3+80	3883.5	3885.5	3918.0	3918.0	3918.0	3918	34.5	32.5	0	0	0	685	685	685
4+00	3883.5	3886.0	3918.0	3918.0	3918.0	3918	34.5	32	0	0	0	690	690	690
4+20	3882.0	3886.0	3918.0	3918.0	3918.0	3918	36	32	0	0	0	705	705	705
4+40	3883.0	3885.5	3918.0	3918.0	3918.0	3918	35	32.5	0	0	0	710	710	710
4+60	3884.0	3886.0	3918.0	3918.0	3918.0	3918	34	32	0	0	0	690	690	690
4+80	3884.5	3887.0	3918.0	3918.0	3918.0	3918	33.5	31	0	0	0	675	675	675
5+00	3884.0	3887.0	3918.0	3918.0	3918.0	3918	34	31	0	0	0	675	675	675
5+20	3886.5	3889.0	3919.0	3919.0	3919.0	3919	32.5	30	0	0	0	665	665	665
5+40	3885.0	3889.5	3913.0	3919.0	3919.0	3919	34	29.5	6	0	0	605	665	665
5+60	3885.5	3889.0	3908.0	3919.0	3919.0	3919	33.5	30	11	0	0	505	675	675
5+80	3887.0	3889.0	3904.0	3919.0	3919.0	3919	32	30	15	0	0	395	655	655
6+00	3888.0	3888.5	3901.5	3919.0	3919.0	3919	33	30.5	17.5	0	0	325	650	650
6+20	3886.0	3889.5	3894.0	3919.0	3919.0	3919	33	29.5	25	0	0	235	660	660
6+40	3886.0	3888.5	3891.0	3912.0	3911.0	3919	33	30.5	28	7	8	130	590	580
6+60	3885.0	3889.0	3888.0	3907.0	3906.5	3919	34	30	31	12	12.5	80	480	485
6+80	3885.0	3888.0	3884.0	3902.0	3901.0	3919	34	31	35	17	18	20	390	375
7+00	3884.0	3886.5	3885.0	3898.5	3898.0	3919	35	32.5	34	22.5	23	0	295	280
7+20	3885.0	3887.5		3893.0	3894.0	3920	35	32.5	0	27	28	0	205	210
7+40	3884.5	3887.0		3892.0	3892.0	3920	35.5	33		28	28	0	155	165
7+60	3885.0	3887.5		3889.0	3889.0	3920	35	32.5		31	31	0	115	115
7+80	3884.0	3886.0		3884.0	3884.0	3920	36	34		36	36	0	40	40
8+00	3884.0	3886.0				3920	36	34				0	0	0
8+20	3883.0	3885.5				3920	37	34.5				0	0	0
												20668 SF	23948 SF	23908 SF

Notes;

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	6+20
Toe	35	7+80
Distance =		1+60
AM Backfill Slope =		4.6

SB	Today	Todate
Backfill	3240 SF	23908 SF
	360 CY	2656 CY

CHART DATA

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

SLURRY EXCAVATION

SB SLURRY WALL

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 07-Nov-06 — INSPECTOR: Steven Day, Geo-Solutions

WIDTH: 3 ft min. (≥ 36 inches) — SLURRY LEVEL: OK — VERTICALITY: OK

MEASURE EXCAVATION PRIOR TO BACKFILLING (Every 25 lf or less)

DATE	STATION NO. Ft.	DEPTH TO TOP OF KEY Ft.	DEPTH IN KEY (min. 2 ft) Ft.	FINAL RECORD DEPTH FROM PLATFORM Ft.	PANEL LENGTH Ft.	EXCAVATED AREA SF	COMMENTS
2-Nov	04+20	32	4.0	36.0	10	360	Encountered 10" pipe at 4+25, cut & plugg
2-Nov	04+30	32	3.0	35.0	10	355	
2-Nov	04+40	32.5	2.5	35.0	10	350	
2-Nov	04+50	32	2.0	34.0	10	345	
2-Nov	04+60	32	2.0	34.0	10	340	
2-Nov	04+70	31.5	2.5	34.0	10	340	
2-Nov	04+80	31	2.5	33.5	10	337.5	
2-Nov	04+90	31.5	2.5	34.0	10	337.5	
2-Nov	05+00	31	3.0	34.0	10	340	
2-Nov	05+10	31	2.5	33.5	10	337.5	Debris
3-Nov	05+20	30	2.5	32.5	10	330	Debris - trench 8 ft wide
3-Nov	05+30	30	4.0	34.0	10	332.5	Debris - trench 10 ft wide
3-Nov	05+40	29.5	4.5	34.0	10	340	Debris - trench 12 ft wide
3-Nov	05+50	30	3.5	33.5	10	337.5	Debris - trench 11 ft wide
3-Nov	05+60	30	4.0	34.0	10	337.5	Debris - trench 11 ft wide
4-Nov	05+70	30.5	2.5	33.0	10	335	Debris
4-Nov	05+80	30	2.0	32.0	10	325	Debris
4-Nov	05+90	30	3.5	33.5	10	327.5	Debris
4-Nov	06+00	30.5	2.5	33.0	10	332.5	Debris - Corner C @ 6+10
4-Nov	06+10	30	3.0	33.0	10	330	
4-Nov	06+20	29.5	3.5	33.0	10	330	
4-Nov	06+30	30	3.0	33.0	10	330	
4-Nov	06+40	30.5	2.5	33.0	10	330	
4-Nov	06+50	30	2.0	32.0	10	325	
4-Nov	06+60	30	2.5	32.5	10	322.5	
4-Nov	06+70	30.5	3.5	34.0	10	332.5	
5-Nov	06+80	31	3.0	34.0	10	340	Cleaned toe of bfill @ AM to Corner
5-Nov	06+90	31	2.5	33.5	10	337.5	
5-Nov	07+00	32.5	2.5	35.0	10	342.5	
5-Nov	07+10	32	2.5	34.5	10	347.5	
6-Nov	07+20	32.5	2.5	35.0	10	347.5	Cleaned toe of bfill @ AM to 6+80
6-Nov	07+30	33	2.0	35.0	10	350	
6-Nov	07+40	33	2.5	35.5	10	352.5	
6-Nov	07+50	33	2.0	35.0	10	352.5	
6-Nov	07+60	32.5	2.5	35.0	10	350	
6-Nov	07+70	33	2.5	35.5	10	352.5	
6-Nov	07+80	34	2.0	36.0	10	357.5	
6-Nov	07+90	34	2.5	36.5	10	362.5	
7-Nov	08+00	34	2.0	36.0	10	362.5	
7-Nov	08+10	34.5	2.0	36.5	10	362.5	
7-Nov	08+20	34.5	2.5	37.0	10	367.5	

SQ FT TODAY: 1,093
SQ FT TODATE: 28,715

COMMENTS:
Completed excavation today at 10:15 am.

COMPLETE

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE SLURRY REPORT

DAILY QC RESULTS

SB SLURRY WALL

DATE: 7-Nov-06 SPECIFICATION: Shaw E&I QC/QA Plan, October 2006 INSPECTOR: Steven Day, Geo-Solutions

FRESH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

TIME:	RESULT:	
NA	NA	SECONDS

No slurry production today

No slurry production today

DENSITY- MINIMUM 64 PCF
2 per shift

TIME:	RESULT:	
NA	NA	PCF

FILTRATE - MAXIMUM 30 CC
1 per truckload

TIME:	RESULT:	
NA	NA	CC

pH > 7 UNITS
1 per shift

TIME:	RESULT:	
NA	NA	UNITS

TEMPERATURE

TIME:	RESULT:	
NA	NA	°F

TRENCH BENTONITE SLURRY:

VISCOSITY- MINIMUM 40 SECONDS
2 per shift

STA:	DEPTH:	RESULT:	
7+80	30	41	SEC
8+00	30	52	

DENSITY- 64 to 85 PCF
2 per shift

STA:	DEPTH:	RESULT:	
7+80	30	74	PCF
8+00	30	85	

MIXING WATER (results from 10/24)

6 < pH < 8

TIME:	RESULT:	
9:15	6.6	UNITS

HARDNESS

TIME:	RESULT:	
9:15	120	PPM

TDS

TIME:	RESULT:	
9:15	<500	PPM

COMMENTS:

Completed excavation today. Slurry testing complete.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA

ASARCO SMELTER PLANT
EAST HELENA, MT

SOIL-BENTONITE REPORT

SB SLURRY WALL

DAILY QC RESULTS

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 7-Nov-06

INSPECTOR: Steven Day
Geo-Solutions

TEST SOIL-BENTONITE BACKFILL

BACKFILL PROPORTIONS

Native Soils:	50% (trench spoil)	Dry Bentonite:	> 1.5% added
Borrow Silt:	50% (CAMU borrow)	Slurry Bentonite:	>1% added

SLUMP (1 per shift)

Time:	Station:	Result:
11:40	6+80	4 INCH

DENSITY (1 per shift)

Time:	Station:	Result:
11:40	6+80	119 PCF

FINES (1 per shift)

Time:	Station:	Result:
11:40	6+80	36 %

SAMPLES FOR LABORATORY TESTING (1 per 500 cy)

Station: 6+80

COMMENTS:

Completed excavation today.

SIGNED: _____
Contractor's QC Supervisor

SIGNED: _____
Owner's Representative

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

BENTONITE CALCULATION

SB Slurry Wall

DAILY QC RESULTS — SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DATE: 11/7/2006 — INSPECTOR: Steven Day, Geo-Solutions

CALCULATIONS FOR THE ADDITION OF DRY BENTONITE TO TRENCH BACKFILL

WIDTH OF TRENCH = 3 ft — TARGET DRY ADDITION = 1.5 %

DATA AS OF END SHIFT

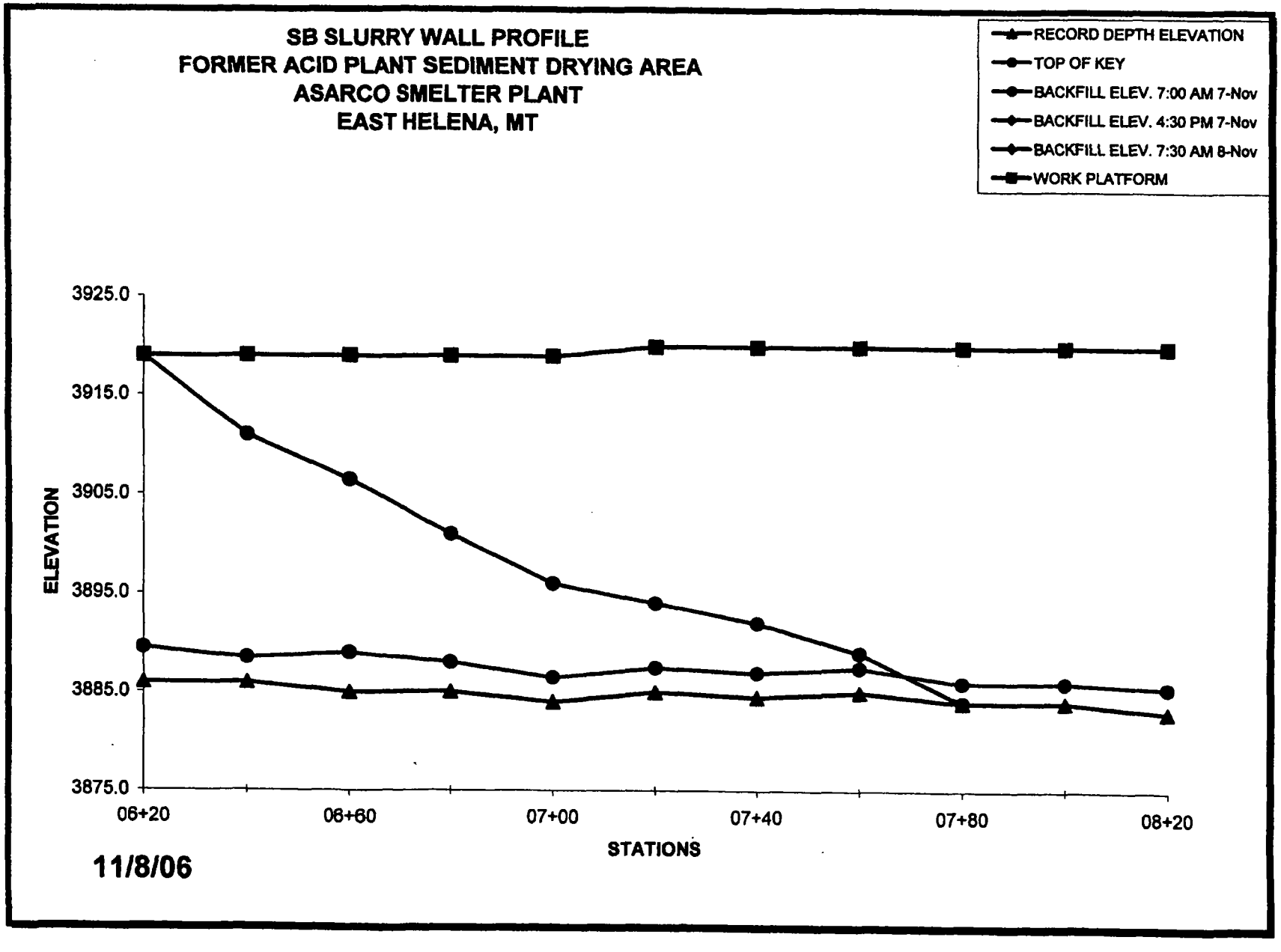
NUMBER OF BULK BAGS MIXED AND PLACED TODAY		10	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	28,000	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TODAY		4,010	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		1,203,000	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.328%	

NUMBER OF BULK BAGS MIXED AND PLACED TO DATE		66	
AVERAGE WEIGHT PER BAG		2800	LBS
TOTAL LBS. OF BENTONITE MIXED AND PLACED	x	184,800	LBS.
TOTAL SQUARE FEET OF TRENCH BACKFILLED TO DATE		27,918	SF
DRY UNIT WEIGHT OF BACKFILL	x	100	PCF
TOTAL DRY WEIGHT OF BACKFILL PLACED		8,375,400	LBS.
PERCENT BENTONITE ADDED TO DRY WEIGHT OF THE BACKFILL		2.21%	

COMMENTS:
SB backfill complete

SIGNED: _____ Contractor's QC Supervisor

SIGNED: _____ Owner's Representative


SB SLURRY WALL PROFILE
FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT
RECORD DEPTH ELEVATION
TOP OF KEY
BACKFILL ELEV. 7:00 AM 7-Nov
BACKFILL ELEV. 4:30 PM 7-Nov
BACKFILL ELEV. 7:30 AM 8-Nov
WORK PLATFORM
3925.0
3915.0
3905.0
3895.0
3885.0
3875.0
ELEVATION
06+20
06+60
07+00
07+40
07+80
08+20
STATIONS
11/8/06

Shaw / Geo-Solutions

FORMER ACID PLANT SEDIMENT DRYING AREA
ASARCO SMELTER PLANT
EAST HELENA, MT

Measurements, Survey and Soundings

SPECIFICATION: Shaw E&I QC/QA Plan, October 2006

DAILY BACKFILL SLOPE AND AREA DATA
DATE: 8-Nov-06

Trench Width = 3.00 ft

STATION	RECORD DEPTH ELEVATION FT	TOP OF KEY ELEVATION FT	BACKFILL ELEV. 7:00 AM 7-Nov FT	BACKFILL ELEV. 4:30 PM 7-Nov FT	BACKFILL ELEV. 7:30 AM 8-Nov FT	WORK PLATFORM ELEV. FT	RECORD DEPTH FT	TOP OF KEY FT	BACKFILL DEPTH 7:00 AM 7-Nov FT	BACKFILL DEPTH 4:30 PM 7-Nov FT	BACKFILL DEPTH 7:30 AM 8-Nov FT	BACKFILL AREA 7:00 AM 7-Nov SF	BACKFILL AREA 4:30 PM 7-Nov SF	BACKFILL AREA 7:30 AM 8-Nov SF
-0+35	3920.0	3920.0	3920.0	3920.0	3920.0	3920	0	0	0	0	0	0	0	0
-0+25	3905.0	3905.0	3920.0	3920.0	3920.0	3920	15	15	0	0	0	75	75	75
0+00	3883.5	3886.5	3920.0	3920.0	3920.0	3920	36.5	33.5	0	0	0	643.75	643.75	643.75
0+20	3885.5	3888.0	3919.5	3919.5	3919.5	3919.5	34	31.5	0	0	0	705	705	705
0+40	3884.0	3887.0	3919.0	3919.0	3919.0	3919	35	32	0	0	0	690	690	690
0+60	3884.5	3888.5	3918.5	3918.5	3918.5	3918.5	34	32	0	0	0	690	690	690
0+80	3883.3	3885.5	3918.0	3918.0	3918.0	3918	34.7	32.5	0	0	0	687	687	687
1+00	3883.0	3886.5	3917.5	3917.5	3917.5	3917.5	34.5	31	0	0	0	692	692	692
1+20	3883.0	3887.0	3917.0	3917.0	3917.0	3917	34	30	0	0	0	685	685	685
1+40	3883.0	3886.0	3916.5	3916.5	3916.5	3916.5	33.5	30.5	0	0	0	675	675	675
1+60	3883.0	3886.0	3916.0	3916.0	3916.0	3916	33	30	0	0	0	685	685	685
1+80	3882.0	3884.5	3916.0	3916.0	3916.0	3916	34	31.5	0	0	0	670	670	670
2+00	3882.5	3885.5	3916.0	3916.0	3916.0	3916	33.5	30.5	0	0	0	675	675	675
2+20	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+40	3882.5	3886.0	3916.0	3916.0	3916.0	3916	33.5	30	0	0	0	665	665	665
2+60	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	665	665	665
2+80	3882.0	3886.0	3916.0	3916.0	3916.0	3916	34	30	0	0	0	670	670	670
3+00	3883.0	3885.5	3916.0	3916.0	3916.0	3916	33	30.5	0	0	0	670	670	670
3+20	3885.0	3888.0	3918.0	3918.0	3918.0	3918	33	30	0	0	0	660	660	660
3+40	3885.0	3888.0	3918.0	3918.0	3918.0	3918	33	30	0	0	0	660	660	660
3+60	3884.0	3887.0	3918.0	3918.0	3918.0	3918	34	31	0	0	0	670	670	670
3+80	3883.5	3885.5	3918.0	3918.0	3918.0	3918	34.5	32.5	0	0	0	685	685	685
4+00	3883.5	3886.0	3918.0	3918.0	3918.0	3918	34.5	32	0	0	0	690	690	690
4+20	3882.0	3886.0	3918.0	3918.0	3918.0	3918	36	32	0	0	0	705	705	705
4+40	3883.0	3885.5	3918.0	3918.0	3918.0	3918	35	32.5	0	0	0	710	710	710
4+60	3884.0	3886.0	3918.0	3918.0	3918.0	3918	34	32	0	0	0	690	690	690
4+80	3884.5	3887.0	3918.0	3918.0	3918.0	3918	33.5	31	0	0	0	675	675	675
5+00	3884.0	3887.0	3918.0	3918.0	3918.0	3918	34	31	0	0	0	675	675	675
5+20	3886.5	3889.0	3919.0	3919.0	3919.0	3919	32.5	30	0	0	0	665	665	665
5+40	3885.0	3889.5	3919.0	3919.0	3919.0	3919	34	29.5	0	0	0	665	665	665
5+60	3885.5	3889.0	3919.0	3919.0	3919.0	3919	33.5	30	0	0	0	675	675	675
5+80	3887.0	3889.0	3919.0	3919.0	3919.0	3919	32	30	0	0	0	655	655	655
6+00	3886.0	3888.5	3919.0	3919.0	3919.0	3919	33	30.5	0	0	0	650	650	650
6+20	3886.0	3889.5	3919.0	3919.0	3919.0	3919	33	29.5	0	0	0	660	660	660
6+40	3886.0	3888.5	3911.0	3919.0	3919.0	3919	33	30.5	8	0	0	580	660	660
6+60	3885.0	3889.0	3906.5	3919.0	3919.0	3919	34	30	12.5	0	0	465	670	670
6+80	3885.0	3888.0	3901.0	3919.0	3919.0	3919	34	31	18	0	0	375	680	680
7+00	3884.0	3886.5	3896.0	3919.0	3919.0	3919	35	32.5	23	0	0	280	690	690
7+20	3885.0	3887.5	3894.0	3920.0	3920.0	3920	35	32.5	26	0	0	210	700	700
7+40	3884.5	3887.0	3892.0	3920.0	3920.0	3920	36.5	33	28	0	0	165	705	705
7+60	3885.0	3887.5	3889.0	3920.0	3920.0	3920	35	32.5	31	0	0	115	705	705
7+80	3884.0	3886.0	3884.0	3920.0	3920.0	3920	36	34	36	0	0	40	710	710
8+00	3884.0	3886.0		3920.0	3920.0	3920	36	34		0	0	0	720	720
8+20	3883.0	3885.5		3920.0	3920.0	3920	37	34.5		0	0	0	730	730
												23908 SF	27918 SF	27918 SF

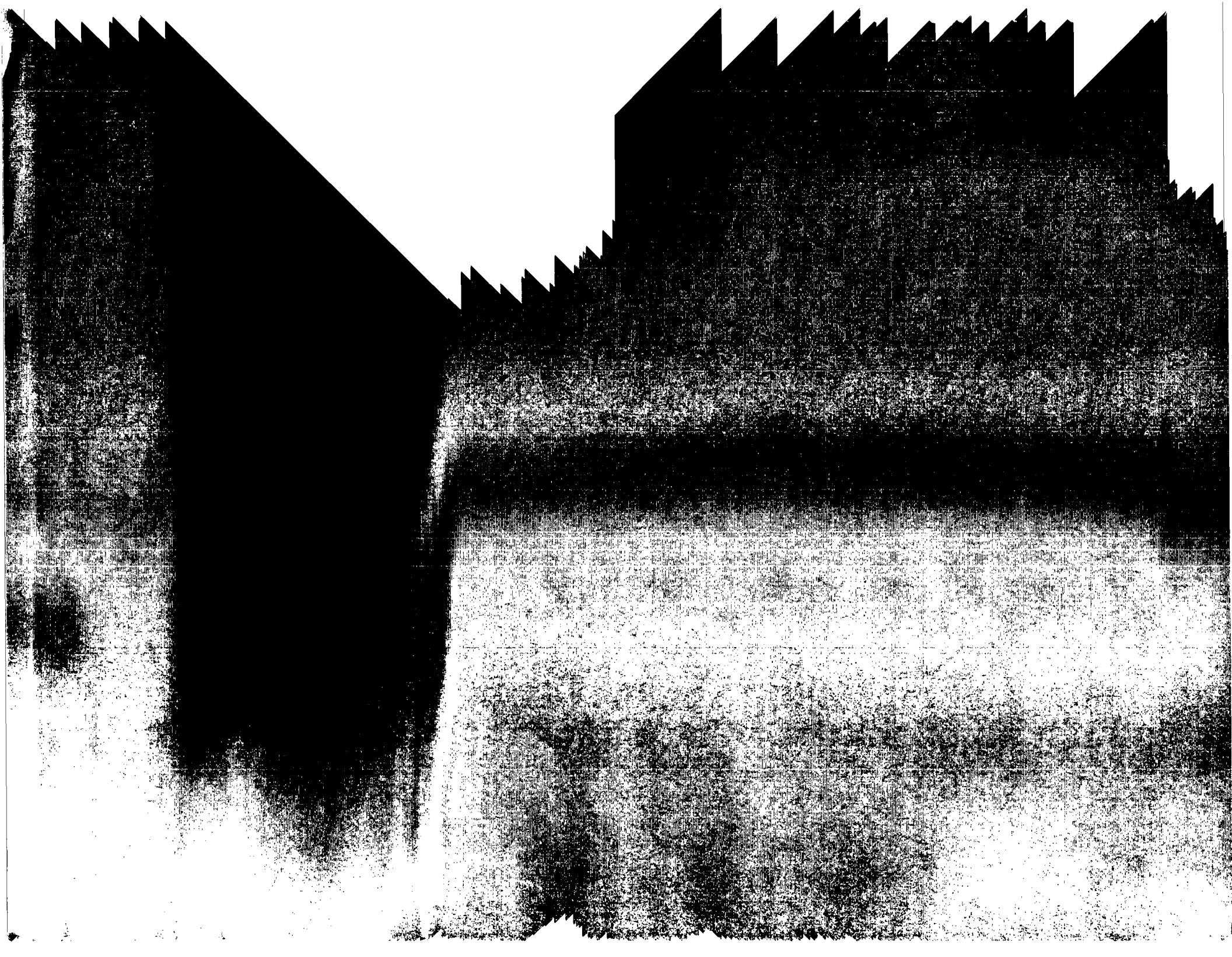
Notes:

Work platform elevations estimated by E. Coombe, Shaw based on previous surveys. Final elevations to be surveyed.

Head	0	0+00
Toe	0	0+00
Distance =		0+00
AM Backfill Slope =		#DIV/0!

SB	Today	Todate
Backfill	4010 SF	27918 SF
	446	3102

CHART DATA



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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	17	06
	NO.	0	0	1
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

FIELD ACTIVITY SUBJECT: Mobilization

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, performed site walk down, discussed scope of work and planned events for site preparation.

0930 Met with Asarco client representative J. Nickel. Discussed daily operations, mobilize equipment and materials. Discussed the location of construction and silt fence and earth berms to be installed by Shaw. The approximate locations as shown on the site plan are acceptable to Asarco.

1100 J. Nickle provided keys to Shaw for the contractors entrance gate at the North West corner of the work site. Shaw will have unrestricted access and will be responsible for entry by sub-contractors and suppliers at that point. Asarco provided two buildings to Shaw for field office and bentnite storage. Crew cleaned up trash and debris and re-arranged materials stored in the building to allow for suitable work space and storage. Ordered 600 linear feet of silt fence and 300 linear feet of orange construction fence from MP&E for site preparation, anticipated delivery is 10/18/06. Ordered 30-3/4" x 6' rebar rods and end caps for fence post from Northside Welding anticipated delivery is 10/18/06.

1300 Picked up 1 support vehicle at Enterprise rental, ordered 50 pallets for bentnite mixing area. Received partial shipment of PPE, Envirocon has some of our safety supplies stored thinking the supplies were for them, Shaw will take delivery from them in the AM.

1500 Asarco to provide a trash dumpster for construction generated waste and PPE generated by Shaw during slurry wall installation. Asarco agreed to manage and dispose of waste generated by Shaw during this project. Received 930 loader with bucket and fork attachment from MP&E

1700 Waiting arrival of the PC-750 from Modern Machinery. Drivers are to contact the project CM prior to delivery to coordinate plant access and ensure excavator is unloaded in the designated location.

1800 No word from Modern Machinery on delivery time of the PC-750. Delivery of the long stick will be tentatively mid day on 10/19/06 instead of AM on 10/18/06 per Reinfelder Transportation. Called Modern Machinery (Jeff) and notified them of the delay and to reschedule the crane and set-up crew to assemble the long stick and PC-750. Will call him back 10/18/06 to confirm new set-up date. Received calls from trucking company for the delivery bentnite for Geosolutions, anticipated arrival is mid day 10/18/06.

1830 No word from Modern Machinery in reguard to the delivery of the PC-750. Secured worksite, Rulon and crew off site.

There were no visitors to the site, there were no changes to plans or specifications and there were no unusual conditions or events to report. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO (Shaw).

SIGNATURE: Terry Rulon	DATE: 10/17/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	17	06
	NO.	0	0	1
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspection: Inspected the site for change in field conditions and identification of the four corners of the proposed slurry wall trench. The site is wet, snowy conditions. One corner is not staked, unsure of actual location (NW), one corner is in conflict with underground utilities (NE) and will have to be moved. Called R. Morgan and notified him of project status, scheduled work and project issues. Directed to contact J. Nickel in regard to slurry wall corners in question.

SIGNATURE: Jerry Ruben	DATE: 10/17/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	18	06
	NO.	0	0	2
	SHEET	1	OF	2

PROJECT NAME: Asarco ASDA Slurry Wall	Project Number # 123157
FIELD ACTIVITY SUBJECT: Mobilization	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Continued with site preparations, receive materials (bentnite, safety supplies) and equipment. Modern Machinery arrived the evening of 10/17 and proceeded to unload the PC-750 undirected. Modern Machinery unloaded the equipment with the help of Envirocon, and in the wrong location.

0930 Met with Asarco client representative J. Nickel. Discussed daily operations, scheduled deliveries and project issues. Discussed the specific location of borrow and anticipated quantity of soil to import to the site and relocation of APBH 1 (NE corner) of slurry wall. Asarco authorized Shaw to mine and import approximately 3000 in place cubic yards of soil from an area out side of the plant, on Asarco property, East of the proposed location of Cell #2 and monitoring well 9. Vegetation will be pushed back to allow soil to be removed from an area approximately 1' foot deep x 300' long x 300' feet wide. Asarco agreed to relocate the N/E corner of the slurry wall approximately 25' linear feet South/West of the existing location to avoid conflict with below ground utilities, (discharge water line) from the water treatment plant. Asarco determined location and placement of the new corner.

1100 MP&E continues to bring in heavy equipment, two truck loads of bentnite and one truck load of equipment arrived for Geo-solutions. Crew unloading trucks. Talked to the truck driver from Reinfelder about the delivery of the long stick for the PC-750. The driver will not arrive in Helena, MT. until mid day 10/19. I called Jeff at Modern Machinery and rescheduled the crane and set-up crew for the morning of 10/20/06. Baker Tanks called and delivery of the 6500 gallon poly tank is scheduled for this afternoon. I called Northland Surveying to schedule, the earliest they can be onsite is 10/19, I confirmed 10/19 for a general topographic survey, off sets along the alignment of the wall, grade cut/fill stakes, two control points and elevation.

1300 Picked up rebar post from Northside Welding, construction fence, silt fence and cam-loc fittings for baker tanks from MP&E. Crew continues to offload materials. Received air monitoring equipment and radios from Shaw's Fendlay, Ohio office. Picked up safety supplies from Envirocon and received other safety supplies from UPS. Asarco delivered a dumpster to the work area for the disposal of construction generated waste.

1500 Same operations continue, no problems to report.

1700 Waiting arrival of the poly tank from Baker Tank, MP&E delivered 1-950 loader, 1-320 excavator with muck bucket, 1-563 compactor and a D-5 dozer. Crew performed initial equipment inspections, noted pre-existing damage and general equipment condition.

1830 Baker Tank delivered the 6500 gallon poly tank for the slurry mixing area. Secured work site, Rulon and crew off site.

There were no visitors to the site, there were no changes to plans or specifications and there were no unusual conditions or events to report. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO (Shaw).

SIGNATURE: Terry Rulon	DATE: 10/18/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	18	06
	NO.	0	0	2
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
Inspected 47.6 tons, (33 bags) of bentnite received for Geo-solutions, Material is in good conditions and meets specifications of the QA/QC plan. Material is properly stored and protected from weather.

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspection: No change in site conditions, weather is overcast with lite winds, low 50's. Called R. Morgan and notified him of project status, scheduled work and project issues. Resolved borrow and relocation of APBH-1 issues. Took photo's of field operations.

SIGNATURE: Henry Dubon	DATE: 10/18/06

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Shaw E & I, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	19	06
	NO.	0	0	3
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Site Preparation/Mobilization	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Continued with site preparations, receive materials and equipment and start clearing borrow area of vegetation.

0930 Ordered hay bales for storm water and silt control measures to be installed along North side of slurry wall. Crew pushing vegetation back from borrow area and started stockpiling soil to haul onto work site for construction of work platform. Northland Surveying onsite to perform a general topographic survey of the slurry wall foot print before construction, identify four survey points of the slurry wall provided to Shaw by Asarco and Hydro-Metrics, obtain geographical coordinates and stake the four corners. Northland also provided two control points at opposite end of the work area and set offsets and grade cut/fill stakes. Northland was on-site approximately 4 hours. Rulon performed real time air monitoring for dust inside of the Feed building/Field Office and within the foot print of the slurry wall next to APSD-2.

1100 Called JRS Trucking and scheduled two trucks for 10/20/06, 0800. Weather permitting hauling will continue through 10/21/06. Called Jeff at Modern Machinery and confirmed the set up of the PC-750 is still on for 10/20/06, he confirmed. Called Shaw's Fendlay, Ohio office to find out where the job box and tools are, R. Keys told me there was a screw up on their end and some of the tools will be dropped shipped 10/20/06 and others will be delivered next week. The job box and tools were scheduled for delivery on 10/18/06.

1300 The truck driver from Reinfelder Transportation arrived on-site with the long stick and bucket. Called Northside Welding and scheduled a crane to lift the equipment off the trailer. Northside Welding arrived onsite with a 20 ton P&H hydraulic crane and off loaded the equipment. Northside was onsite for approximately 1 hour. Called Jeff with Modern Machinery and told him the equipment was onsite. Called and left a voice mail message for B. Cox (Asarco) plant manager to notify him of the conflict between the North West corner of the slurry wall and the road, also to notify him of concrete discovered below the asphalt cap in the alignment of the slurry wall trench. Crew started to cut/fill work platform to grade with D-5 dozer and compact soil with 563.

1500 Crew continues to develop the borrow area and stock pile import material for backfill. Called R. Morgan to notify him of the concrete, he said to keep digging through it up to the North West corner to see if the concrete runs out. Further investigation of APBH-3 suggest that the concrete overlies the entire area of the asphalt cap which will be in conflict with excavation for the slurry wall trench. The asphalt and concrete will have to be pulled up along the trench alignment, backfilled with borrow and compacted to maintain trench wall stability.

1700 Baker Tank arrived with the 20,000 gallon frac tank for the slurry mixing area, Shaw was directed by S. Day (Geo-solutions) not to set-up the slurry mixing plant until his arrival on 10/21/06. Shaw placed the tank in a suitable location, close to the upper lake.

1800 Secured work site, Rulon and crew off site.

There were no visitors to the site, there were no changes to plans or specifications. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO (Shaw). Northland Surveying (2-men), Northside Welding (1-man)

SIGNATURE: Terry Rulon DATE: 10/19/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	10	19	06
	NO.	0	0	3
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
Briefed Northland Surveying of survey requirements per their scope of work.

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspection: No change in site conditions, weather is overcast with lite winds, low 50's. Called R. Morgan and notified him of project status, scheduled work and project issues. Took photo's of field operations.

SIGNATURE:	DATE: 10/19/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	20	06
	NO.	0	0	4
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Site Preparation/Mobilization	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Continued with site preparations, receive materials and equipment, construct work plat form and set-up PC-750. Two trucks from JRS trucking on-site to import soil from borrow area, rain over night and rainy/wet conditions this AM prohibits trucking today. Sent drivers back, no charge. If conditions improve will try and re-schedule for tomorrow 10/21/06. B. Cox (Asarco) plant manager on site to discuss the location of the North West corner of the trench. He directed Shaw to move the corner to the South approximately 20' linear feet to allow the road to be kept open and to avoid disturbing the concrete berm designed to direct storm water away from the slurry wall location. B. Cox said the concrete pad over laid the area covered by asphalt and was installed for a drying pad. B. Cox authorized Shaw to utilize concrete blocks, located on site, for the construction of the North side of the work platform.

0930 Modern Machinery onsite, (1-crane operator, 2- service technicians) to set-up PC-750. Modern Machinery set counter weight on PC-750 and moved the machine over to the work site. Shaw crew continues constructing the work platform. Continue removal of concrete and asphalt from the area along the Northern trench alignment. Concrete is very tough coming up. Talked to R. Morgan in regard to the concrete and corner issues. R. Morgan will notify B. Miller (Asarco) client representative of the change in site conditions and scope of work. Rulon performed real time air monitoring for dust in the work area and inside of the Feed building/field office and personal air monitoring on R. Cattles, D. Kilker and D. Bloss.

1100 Called JRS Trucking and scheduled two trucks for 10/20/06, 0800. Weather permitting hauling will continue through 10/21/06. Called Jeff at Modern Machinery and confirmed the set up of the PC-750 is still on for 10/20/06, he confirmed. Called Shaw's Fendlay, Ohio office to find out where the job box and tools are, R. Keys told me there was a screw up on their end and some of the tools will be dropped shipped 10/20/06 and others will be delivered next week. The job box and tools were scheduled for delivery on 10/18/06.

1300 Received approximately 100 bales of hay for storm water/silt control along the North side of the work platform.

1500 Set-up of the PC-750 complete, Modern Machinery off site. Crew continues site prep, installing silt fence along the South side of the work platform and hay bales along the North side of the work platform.

1700 Called and schedule trucks for tomorrow AM. Import of borrow could be possible if weather conditions improve.

1830 Secured work site, Rulon and crew off site.

B. Cox (Asarco) visited the site, the concrete issue remains unresolved, re-location of the North West corner of the slurry wall will have to be surveyed in. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO (Shaw). Modern Machinery (2-service technicians, 1-crane operator).

SIGNATURE: Terry Rulon DATE: 10/20/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	20	06
	NO.	0	0	4
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
Briefed Modern Machinery of set-up requirements per their scope of work.

Initial Inspections:
Inspected the PC-750, all components assembled as required, equipment ready to go.

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions are wet, cold and rainy, low 37 degrees. Called R. Morgan and notified him of project status, scheduled work and project issues. Took photo's of field operations.

SIGNATURE: Jerry Dulan	DATE: 10/20/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	21	06
	NO.	0	0	5
	SHEET	1	OF	2

PROJECT NAME: Asarco ASDA Slurry Wall	Project Number # 123157
FIELD ACTIVITY SUBJECT: Site Preparation/Mobilization	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. One truck from JRS trucking onsite. Continued with site preparations, construct work platform backfill and compact soil imported from borrow area.

0930 Same operations continue, 1- EO loading hauling soil from borrow area, 1- EO placing/rough grading soil, 1- EO compacting. Rulon performed real time air monitoring for dust within the work area and inside of the Feed building/field office. Started snowing.

1030 Stopped hauling soil, conditions too wet, driver off-site. Scheduled 1 truck for 10/23/06 AM. Weather conditions are supposed to improve by Monday 10/23/06

1100 Crew cleaning up mud on road from borrow area to site, placed remaining soil and compact.

1300 Crew working on installation of construction fence post, having to hammer drill through asphalt and concrete.

1500 Same operations continue, snow continues to fall.

1830 Secured work site, Rulon and crew off site.

North West corner issue remains unresolved. There were no visitors to site today. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO (Shaw). Steve Day-Geo-solutions, JRS Trucking 1-driver

SIGNATURE: Terry Rulon	DATE: 10/21/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	21	06
	NO.	0	0	4
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions are wet, cold and snowy, low 37 degrees. Called R. Morgan and notified him of project status, scheduled work and project issues. Took photo's of field operations.

SIGNATURE: Gary Pulan	DATE: 10/21/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	23	06
	NO.	0	0	6
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Site Preparation/Mobilization	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. One truck from JRS trucking onsite. Continued with site preparations, construct work platform backfill and compact soil imported from borrow area.

0930 Same operations continue, 1- EO loading, hauling soil from borrow area, 1- EO placing/rough grading soil, 1- EO compacting. Rulon performed real time air monitoring for dust within the work area, up wind and down wind. Performed personal air monitoring on Kilker, Cattles and Bloss doing intrusive soil work inside and outside of the work area.

1030 Received 1 truck load (22 bags) of bentnite from Wyo-Ben. Off loaded and stored inside Feed building/field office.

1100 Same operations continue, R. Morgan (Shaw PM), J. Hunt (Shaw PBA) and B. Miller (Asarco) client representative onsite. Met with Graham (Envirocon) discussed logistics of placing concrete and asphalt in former ore storage building.

1300 Crew continued working on work platform importing soil from borrow area. S. Day (Geo-solutions) setting up mixing plant and equipment. K. Richardson (Shaw) mobilized and arrived on site. Conducted site safety briefing for new site personnel. B. Miller authorized Shaw to relocate the North West corner of the slurry wall approximately 10 feet to the south and 20 feet to the East of the original survey location. The new location was determined by Asarco.

1500 Crew installing silt fence along lower lake, East side of work site, building containment berm and stockpiling soil from borrow area for backfill. Work platform complete. Asarco authorized Shaw to remove remaining asphalt and concrete from the area in conflict with the trench alignment. B. Miller signed field work change orders for the additional work. The 320 track hoe on site will be utilized to break the concrete and remove the material, trucks will be scheduled to haul the material to the former ore storage building on site.

1730 JRS trucking off site, hauled 35 loads (11 hours) Shaw continued to mine and stockpile soil in borrow area install silt fence, berms and grade and compact work platform.

1830 Secured work site, Rulon and crew off site.

North West corner issue resolved. Visitors to site today included J. Nickle and B. Miller (Asarco). Personnel on site, R. Morgan-PM, J. Hunt- Project Accountant, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer (Shaw). Steve Day-Geo-solutions, JRS Trucking 1-driver

SIGNATURE: Terry Rulon	DATE: 10/23/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	10	23	06
	NO.	0	0	6
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
Inspected 30.85 tons, (22 bags) of bentnite received for Shaw, material is in good condition and meets specifications of the QA/QC plan. The material is properly stored and protected from the weather.

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions are partly cloudy, warmer, lite winds from the North West, mid to upper 50's. Took photo's of field operations.

SIGNATURE: Gerry Dulon	DATE: 10/23/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	24	06
	NO.	0	0	7
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Site Preparation/Mobilization	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. One truck load of bentnite arrived onsite. Helena fuel supply onsite for fuel delivery. Geo-solutions marked out trench alignment along North and West sides of work area.

0930 Unloaded bentnite and stored in former fab shop, MP&E onsite to deliver breaker for 320 excavator. Started breaking out concrete and asphalt from an area approximately 10' feet wide and 250' feet long. 2-EO at borrow area mining soil to import as fill for the trench. 1-man continues with site preparations, drilling for rebar fence post, finishing up silt fence, moving hay bales. No air monitoring was performed today.

1030 Same operations continue, no problems to report. B. Cox visited the site, gave him an update of operations underway, he confirmed the site specific safety training scheduled at 08:00 tomorrow 10/25/06. Hydro-metrics was on site looking for B. Miller, Hydro-metrics left 2 boxes of well screen to be installed in the slurry wall when it is installed.

1300 Helena Trailer Sales delivered a field office for Shaw to be set-up inside of the Feed building, the office was in need of some repair and cleaning. J. Hunt (Shaw) running for supplies, setting up logistics with Best Oil Company, UPS, and Eagle Electric. Geo-solutions requested Shaw provide an air compressor to clear slurry lines and a weed burner and propane tank to thaw valves and connectors in the event of freezing temperatures. M. Swickard (Shaw) mobilized and arrived on site. Conducted site safety briefing for new site personnel. 1 truck load of bentnite arrived on site for Shaw and was off loaded in the fab shop.

1500 Eagle Electric on site to connect temporary power to the field office. Crew completed installing silt fence along lower lake and South side of work area and containment berms.

1730 Completed breaking out concrete and asphalt, continued removal of concrete, called MP&E took breaker off rent, scheduled pick-up for 10/25/06 in AM. Went by MP&E picked up two rolls of construction fence and three teeth for PC-750 and o-rings for the 320 excavator. Talked to mechanic about the 950 loader (bucket leveler not working properly) MP&E will come out tomorrow to fix the problem. Crew continued to put up construction fence along Soth side of work area. E. Coombe (Shaw) arrived on site for engineering project support.

1800 Crew wrapped up daily operations, secured equipment.

1830 Secured work site, Rulon and crew off site.

Visitors to site today included J. Nickle (Asarco) he went through the procedures to operate the wash rack on site to decon the dump trucks scheduled for tomorrow. Personnel on site, R. Morgan-PM, J. Hunt- Project Accountant, E. Coombe- Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard (Shaw), and Steve Day-Geo-solutions.

SIGNATURE: Terry Rulon	DATE: 10/24/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	24	06
	NO.	0	0	7
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
Inspected two loads, of bentnite received for Shaw, material is in good condition and meets specifications of the QA/QC plan. The material is properly stored and protected from the weather. Delivery tickets not received, paper work is not in order. S. Day (Geo-solutions) is to get paper work straightened out.

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions are partly cloudy to overcast, cold, lite winds from the North West, upper 40's to low 50's. Took photo's of field operations.

SIGNATURE:	DATE: 10/24/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	25	06
	NO.	0	0	8
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Site Preparation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards.

08:00 Shaw personnel attended site specific safety training for Asarco. Topics covered were contaminants of concern (arsenic, lead and chromium), fire protection, asbestos awareness, blood born pathogens and lock out/tag out.

0930 JRS trucking on site with 1-tandom axel dump truck and 1 off road dump truck to haul concrete and asphalt from work area to former ore storage building. The driver of one truck declined to use the tandem axel truck for hauling concrete as the dump bed is made from aluminum and not suitable for hauling large pieces of concrete and left site. Briefed the driver and equipment operators of task and potential hazards. Continued breaking out concrete and asphalt with the 320 excavator, loading trucks with the 930 loader, managing the material dumped inside the ore storage building with the 950 loader. Continued with site preparation and setting up mixing plant equipment. Rulon performed real time air monitoring for dust and personnel air monitoring on Richardson and Swickard.

11:00 Completed removal of concrete and asphalt, loading trucks with 320 excavator, 930 loader is placing equipment for the slurry mixing plant. D. Kilker reported a minor equipment damage incident. While working inside of the ore storage building, a piece of concrete struck the left front fender of the 950 loader, causing a small crease in the bottom orf the fender. Rulon reported the damage to R. Morgan and to MP&E. Shaw requested MP&E to come to the site and survey the damage and provide Shaw with an estimated cost to repair. MP&E on site to pick up breaker. MP&E reset controls on 950 loader to correct problem with bucket leveler.

1300 Crew setting up, cleaning field office. Continued loading, hauling concrete and asphalt, continue setting up mixing plant. Observed operations underway, no unsafe acts or conditions to report. J. Hunt continues to run for supplies and coordinate project logistics, E. Coombe working on survey issues.

1500 Backfilled trench left behind from removal of concrete and asphalt, utilized 463 compactor to compact soil in the area to maximize trench stability.

1730 Shut off hauling of concrete for today, will schedule truck for tomorrow am to finish up. Crew completed setting up field office, erection of temporary construction fence and laying out hose for pumping slurry into trench. Will test mixing plant and hoses with water tomorrow.

1800 Crew wrapped up daily operations, secured equipment and left site.

1830 Secured work site, Rulon off site.
Visitors to site today included J. Nickle (Asarco) he asked how the site specific training went and about how work was going. Personnel on site, R. Morgan-PM, J. Hunt- Project Accountant, E. Coombe- Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day-Geo-solutions.

SIGNATURE: Terry Rulon | DATE: 10/24/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	25	06
	NO.	0	0	8
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions unchanged, partly cloudy to overcast, cold, lite winds from the North West, upper 40's to low 50's. Took photo's of field operations.

SIGNATURE:	DATE: 10/26/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	26	06
	NO.	0	0	9
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Haul Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards.

08:00 Daily operations underway, 2 trucks from JRS on site to haul soil from borrow area to work area to be utilized as trench backfill. 1 off road dump truck onsite to complete hauling concrete and asphalt to ore storage building, 950 loader managing materials dumped inside. D-5 dozer pushing up and stockpiling soil from borrow area inside of the work area in preparation for trenching and mixing backfill.

10:00 Last load of concrete loaded and dumped inside of ore storage building, Shaw deconned the off road truck and 950 loader at the truck wash bay on site. Called and ordered fuel and Little John's to service porta- potti. Rulon performed real time air monitoring for dust with PDR's.

11:00 Deconned 453 compactor and fueled, called MP&E took compactor off rent, JRS trucking onsite to pick up off road truck.

1300 Held preparatory inspection meeting with Geo-solutions for slurry wall installation, MP&E was on site to photo damage on the 950 loader. E. Coombe setting stations out along trench alignment for checking trench depth at 20 feet intervals. Geo-solutions tested slurry mixing plant with water, everything is operational, materials are on hand, anticipate excavation for the slurry wall to commence 10/27/06.

14:00 Started stockpiling borrow material around the trench alignment, approximately 2 cubic yards of material per linear foot of trench will be necessary, along with 1-bag of bentnite every 15 linear feet. Reed screen from Helena Sand and Gravel is scheduled for delivery this afternoon,1- truck from JRS left site due to a shortage of developed soil in borrow area. 1 trucked hauled until 14:30, sent truck off site, continued to mine and stockpile soil from borrow area. Approximately 500 cubic yards of soil remains to be mined and imported from the borrow area. Called JRS and scheduled 1 truck for tomorrow AM.

1730 Crew wrapped up daily operations, there were no unusual conditions or events to report today.

1800 Crew secured equipment and left site.

1830 Secured work site, Rulon off site.
There were no visitors on site today. Personnel on site, R. Morgan-PM, J. Hunt- Project Accountant, E. Coombe-Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day-Geo-solutions.

SIGNATURE: Terry Rulon	DATE: 10/26/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	26	06
	NO.	0	0	9
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
Held preparatory inspection meeting with S. Day (Geo-solutions) T. Rulon-CM/CQC/SSHO and Russell Morgan-PM, Shaw E&I, for slurry wall installation and QA/QC requirements. Discussed scope of work, preparatory requirements regarding calibration and inspection of equipment, soil testing for water content and fines and testing of water used in the slurry mixture. A review of contract plans , specifications, drawings and required control inspections and test requirements, confirmed materials and equipment meet specifications and are on site and available for use. Shaw and Geo-solutions discussed procedures for performing the work and job safety analysis and reviewed the appropriate activity hazard analysis.

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions unchanged, partly cloudy to overcast, cold, lite winds from the North West, upper 40's to low 50's. Took photo's of field operations.

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	27	06
	NO.	0	1	0
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Haul Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards.

08:00 Daily operations underway, 1 truck from JRS on site to haul soil from borrow area to work area to be utilized as trench backfill, 950 loader managing materials dumped inside work area. D-5 dozer pushing up and stockpiling soil from borrow area inside of the work area in preparation for trenching and mixing backfill.

10:00 Started mixing slurry for trench, called and ordered fuel. Rulon performed real time air monitoring for dust with PDR's and performed personal air monitoring on Swickard and Richardson.

11:00 Rulon inspected operations under way, there were no unsafe acts or conditions to report. Every thing will be ready to start excavating trench for slurry wall after lunch. Best oil company on site to deliver motor oil, still have 1 bucket of grease on back order.

1300 Started digging for trench installation, no problems or unusual conditions to report. Completed hauling soil in from borrow area, JRS trucking off site. Helena Fuel Supply on site, topped off all equipment with fuel, will schedule next delivery for 10/28/06 late afternoon. Closed up exclusion zone (EZ), set up contamination reduction zone (CRZ) for personal decontamination at entrance to EZ.

14:00 Excavated to an approximate depth of – 37" feet below grade at North/West corner, station 0+00, started filling trench with slurry. Continued making slurry at mixing area and pumping into trench. Non suitable material from trench being stockpiled next to screening plant. Performed scheduled QC tests on slurry, identified tie in zone at approximately – 35' feet below grade, pulled sample of material, checking trench depth every 10 linear feet, materials and key in depths meet the requirements per QA/QC Plan. Reed Screen from Helena Sand and Gravel on site and set-up inside the EZ.

1730 Dug to station 0+20' feet, plus lead in at North/West corner of slurry wall, crew wrapped up daily operations, there were no unusual conditions or events to report today.

1800 Crew secured equipment and left site.

1830 Secured work site, Rulon off site.
J. Nickle (Asarco) on site to check progress, Hydro-Metrics personnel on site to deliver well materials to install in trench per clients request and met with R. Morgan and E. Coombe (Shaw) to discuss installation. Personnel on site, R. Morgan-PM, J. Hunt- Project Accountant, E. Coombe- Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day-Geo-Solutions.

SIGNATURE: [signature] DATE: 10/27/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	27	06
	NO.	0	1	0
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions unchanged, partly cloudy to overcast, cold, lite winds from the North West, upper 40's to low 50's. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. Took photo's of field operations.

SIGNATURE:	DATE: 10/27/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	28	06
	NO.	0	1	1
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Haul Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards.

0800 Daily operations underway, Continued digging trench along Site A, no problems or unusual conditions to report. Started mixing slurry and pumping the slurry into the trench. Continued to move bentonite super sacks along the mixing piles and clean borrow soil adjacent to the location of the slurry wall. Continued to manage excavated, non-suitable materials, and slurry backfill mixture with CAT 320C excavator and CAT 950 loader Rulon performed real time air monitoring for dust with PDR's and performed personal air monitoring on Swickard and Richardson.

0900 Started mixing slurry backfill mixture with borrow soil, bentonite, and suitable excavated soil.

11:00 Completed moving bentonite super sacks for slurry backfill mixture. Rulon inspected operations under way, there were no unsafe acts or conditions to report. Performed scheduled QC tests on slurry, identified tie in zone at approximately 34 feet below grade at station 0+50, pulled sample of material, checking trench depth every 10 linear feet, materials and key in depths meet the requirements per QA/QC Plan.

1130 Held Initial Inspection meeting with Shaw and Geo-Solutions personnel; see QA/QC Report for summary of meeting. Called off rent for the 5,000 gallon Baker Tank; tank is scheduled for pickup next week.

1230 Safety Council meeting with Shaw and Geo-Solutions personnel.

1330 Started screening excavated soils in the Reed Screen. Set up bootwash station adjacent to the EZ.

1530 Helena Fuel Supply on site; topped off all equipment with fuel.

1730 Dug to station 1+20 feet at 33 ft bgs (low permeability ash layer at 31 ft bgs). Backfill slurry materials detected up to station 0+90 plus lead-in. Crew wrapped up daily operations. Blew out slurry lines and secured site in anticipation of snow and cold weather. There were no unusual conditions or events to report today.

1800 Crew secured equipment and work site. Crew and Rulon left site.

Personnel on site, R. Morgan-PM, J. Hunt- Project Accountant, E. Coombe- Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day-Geo-Solutions.

SIGNATURE: Terry Rulon	DATE: 10/28/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	10	30	06
	NO.	0	1	2
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
Performed initial inspection of trench installation with S. Day (Geo-Solutions), T. Rulon – CM/CQC/SSJO, R. Morgan –PM, and E. Coombe – Project Engineer for slurry wall construction and QC requirements. Discussed preliminary work, compliance with drawings, and compliance with specifications. In summary, the "key-in" layer (i.e., the low permeability as layer) is easily identifiable, station 0+00 (i.e., the northwest corner or corner at sides A and D) was excavated down to 36.5 feet thus giving a 3 foot key-in, and all QC tests are being conducted. Reviewed and discussed management of debris, maintenance of equipment, exclusion zone and boot wash station, and supplies. Also discussed that monitoring wells will not be installed inside the slurry wall per direction from ASARCO.

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions unchanged, partly cloudy to overcast, cold, light winds from the North West, upper 40's to high 50's. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. Took photo's of field operations.

SIGNATURE:	DATE: 10/28/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	30	06
	NO.	0	1	2
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Haul Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards.

0800 Daily operations underway, freezing temperatures has equipment down. Pumps froze up, won't start, reed screen won't start. Below 20 degrees overnight, 18 degrees at start time. Crew working to get things thawed out. Special precautions were taken during shut down on 10/28 to avoid down time due to cold weather, lines were cleared and pumps were drained, problems still occurred. Coombe performed real time air monitoring for dust with PDR's.

0900 J. Nickel on site to check progress and remind Shaw the EPA will be on site this week.

11:00 Equipment up and running, crew mixing backfill and making slurry. Continued to trench along side "A" nearing corner to side "B".

1300 Linda Jacobson (EPA Region 8) on site for a visit and to check progress of work.

1600 Helena Fuel Supply on site, topped off all equipment with fuel, will schedule next delivery for 11/01/06 late afternoon. Rounded corner to side "B", continued mixing backfill and placing in trench, continued making slurry.

1730 Dug to station 02+00 feet at 33.5 ft bgs (low permeability ash layer at 30.5 ft bgs). Backfill slurry materials detected up to station 01+20 plus lead-in at approximately 30' bgs. Crew wrapped up daily operations. There were no unusual conditions or events to report today. Crew wrapped up operations, cleared lines, drained pumps and opened valves. Equipment secured, crew left site. Overnight temperatures are to be in the single digits.

1830 Secured work site, Rulon off site.

Linda Jacobson, EPA Region 8 on site for visit, non-regulatory. Personnel on site, R. Morgan-PM, E. Coombe-Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day-Geo-Solutions.

SIGNATURE: [signature] DATE: 10/30/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

QA/QC REPORT

DAILY LOG				
	DATE	10	30	06
	NO.	0	1	2
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions partly cloudy to overcast, cold, light winds from the North West, upper teens to low 20's. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. Took photo's of field operations. The EPA had no issues to report, overall project performance was satisfactory.

SIGNATURE: [signature]	DATE: 10/30/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	10	31	06
	NO.	0	1	3
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Haul Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards.

0800 Daily operations underway, crew thawing out equipment, freezing temperatures again overnight, low was 4 degrees. Coombe performed real time air monitoring for dust with PDR's.

0900 Equipment up and running, crew continued trenching for slurry wall, making slurry and mixing backfill. Extremely cold this morning, ice covers the work area and equipment. Working surfaces covered with ice, crew using ice melt to help reduce slipping hazards.

1100 Continued to trench along side "B" work is backing up due to the amount of debris encountered at 01+60, taking considerably more time to excavate and screen the material generated by trenching, frozen soil from overnight is also taking additional time to screen and manage.

1300 J. Nickel visited the site to check on progress. All work performed in accordance with the Work Plan and QA/QC Plan. Good progress being achieved.

1400 Linda Jacobson (EPA Region 8) on site for a visit and to check progress of work.

1600 Removed silt fence and hay bales from South/ East corner of excavation area to allow the PC-750 to dig through corner to side "C". Several cubic yards of soil were needed and hauled in to extend work platform beyond corner.

1730 Dug to station 03+20 feet at 34 ft bgs (low permeability ash layer at 30 ft bgs). Backfill slurry materials detected up to station 03+00 plus. Crew wrapped up daily operations. Two abandon, below ground pipes were excavated and removed from the trench at 03+00. Pipe (1- 12" culvert and 1- 12 PVC) sections were removed from the trench alignment and backfilled with soil. Crew wrapped up operations, cleared lines, drained pumps and opened valves. Pumps and valves were covered with concrete blankets in an effort to keep frost from setting in and making start-up difficult. Equipment secured, crew left site. Overnight temperatures are to be in the single digits again.

1800 Secured work site, Rulon off site.

Linda Jacobson, EPA Region 8 on site for visit, non-regulatory. Personnel on site, R. Morgan-PM, E. Coombe-Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day-Geo-Solutions.

SIGNATURE: Terry Rulon	DATE: 10/31/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	10	31	06
	NO.	0	1	3
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions clear, cold, light winds from the North West, upper teens to low 20's. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. Took photo's of field operations. The EPA had no issues to report, overall project performance was satisfactory.

SIGNATURE:	DATE: 10/31/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	1	06
	NO.	0	1	4
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Mix Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Safety topic today was Slips, Trips and Falls.

0800 Daily operations underway, crew thawing out equipment, freezing temperatures again overnight, low was 8 degrees. Coombe performed real time air monitoring for dust with PDR's. Reed screen down due to maintenance issues. Helena Fuel Supply on site to fuel equipment, scheduled next delivery for 11/3/06 early AM.

0900 Equipment up and running, crew continued trenching for slurry wall, making slurry and mixing backfill. Cold again this morning, working surfaces covered with ice, crew using ice melt to help reduce slipping hazards.

1100 Continued to trench along side "C" work continues backing up due to the amount of debris and non-suitable material for backfill, required to be screened. B. Miller (Asarco) on site to check on work performed and progress being made.

1300 J. Nickel (Asarco) and Linda Jacobson (EPA) visited the site to check on progress. Les from Helena Sand and Gravel on site to look at problems with the "Reed" screen. All work performed in accordance with the Work Plan and QA/QC Plan. Good progress being achieved.

1500 Built berm up along the South/West corner of the work area, reinstalled silt fence and hay bales. Removed soil from work platform and placed inside of the slurry wall foot print. Crew rolled up slurry hose no longer being utilized.

1630 Dug to station 04+10 feet at 33 ft bgs (low permeability ash layer at 30.5 ft bgs). Backfill slurry materials detected up to station 03+60. Crew wrapped up daily operations. Two abandon, below ground pipes were excavated and removed from the trench at 03+00. Pipe (1- 12" culvert and 1- 12 PVC) sections were removed from the trench alignment and backfilled with soil. Crew wrapped up operations, cleared lines, drained pumps and opened valves. Pumps and valves were covered with concrete blankets, heat lamps were utilized to prevent freeze up. Rented a torpedo heater and 2500kw generator to keep equipment warm overnight.

1700 Equipment secured, crew left site. A mechanic from Helena Sand and Gravel on site to repair mechanical problems on the "Reed" screen, experienced this morning. Overnight temperatures are expected to be in the single digits again tonight.

1930 Mechanic completed repairs on screen, deconned his truck before leaving site. Secured work site, Rulon off site.

Linda Jacobson, EPA, B. Miller, J. Nickel, B. Cox (Asarco) visited the site today. Shaw received recognition from them fro doing a good job. Personnel on site, R. Morgan-PM, E. Coombe- Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day-Geo-Solutions.

SIGNATURE: [signature] DATE: 11/1/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

QA/QC REPORT

DAILY LOG				
	DATE	11	1	06
	NO.	0	1	4
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
E. Coombe, T. Rulon (Shaw) and S. Day (Geo-Solutions) conducted a Follow-up QC inspection of trench installation. Fines content, slump, bentnite to soil ratio were determined by sampling. Daily test performed are within project specifications. There are no non conformances or deficiencies to report.

Completion Inspections:
None

General Site Inspections: Site conditions clear, cold, light winds from the North West, upper teens to low 20's. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. Took photo's of field operations. The EPA and Asarco had no issues to report, overall project performance was satisfactory.

SIGNATURE: Tracy Rulon	DATE: 11/1/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	2	06
	NO.	0	1	5
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Mix Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Safety topic today was "Save Your Skin".

0800 Daily operations underway, freezing temperatures again overnight, low was 11 degrees. Equipment up and running, extra measure taken at shifts end 11/1/06 prevented equipment from freezing up overnight. Coombe performed real time air monitoring for dust with PDR's.

0900 Asarco conducted per bid meeting and walk through for additional work, R. Morgan attended. Town meeting was held last night, E. Coombe and R. Morgan were in attendance. Crew continued trenching for slurry wall at station 04+10, making slurry and mixing backfill. Scheduled JRS Trucking to import additional soil from borrow area on 11/3/06

1100 Continued to trench along side "C" work continues backing up due to the amount of debris and non-suitable material for backfill, required to be screened. Crew working as fast as possible to keep up with trench progress. Called Modern Machinery (Jeff) to alert them the PC-750 will be ready for tear down by mid week next week.

1300 E. Coombe and R. Morgan off site. Work being performed in accordance with the Work Plan and QA/QC Plan. Good progress being achieved.

1500 J. Nickel (Asarco) and Linda Jacobson (EPA) visited the site to check on progress and see if there were any issues pending. J. Nickel will be off site until 11/7/06. There are no issues to report. One truck fro JRS trucking on site hauling soil from borrow area to work area. Soil being stockpiled where room is available. Need to import approximately 1000 cubic yards to finish the trench.

1630 Helena Fuel Supply on site at 1600, An abandoned 10 " inch pipe was encountered at 04+25 crossing the trench alignment, a section of pipe was removed and the ends were backfilled with soil. Crew wrapped up slurry operations, cleared lines, drained pumps and opened valves. Pumps and valves were covered with concrete blankets, heat lamps were utilized to prevent freeze up.

1700 Dug to station 05+10 feet at 33.5 ft bgs (low permeability ash unit at 31 ft bgs). Backfill slurry materials detected up to station 05+00. Equipment secured, Cattles and Richardson left site.

1730 Bloss, Kilker, Swickard and Rulon working late to try and catch up with the PC-750, a lot of material remains to be screened South/East corner, a lot of screened material needs to be mixed for backfill and placed into trench.

Linda Jacobson, (EPA) and J. Nickel (Asarco) visited the site today to check on progress and see if there were any issues. There are no issues at current time. Personnel on site, R. Morgan-PM, E. Coombe- Project Engineer, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day-Geo-Solutions. R. Morgan and E. Coombe demobilized from the project today.

SIGNATURE:	DATE: 11/2/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	11	2	06
	NO.	0	1	5
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None

Completion Inspections:
None

General Site Inspections: Site conditions partly cloudy to overcast skies. Cold, low 20's in AM, high today was 36 degrees. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. Took photo's of field operations.

SIGNATURE:	DATE: 11/2/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	3	06
	NO.	0	1	6
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Mix Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Safety topic today was "Break for Safety".

0800 Daily operations underway, not as cold last night, low was 18 degrees. Equipment up and running, engineering controls implemented 11/2 working well keeping equipment from freezing up overnight. Rulon performed real time air monitoring for dust with PDR's up wind and down wind of the work area. Crew continued trenching for slurry wall at station 05+20, making slurry and mixing backfill. JRS Trucking on site to import soil from borrow area.

1100 Continued to trench along side "C" trench progress has slowed considerably due to large debris encountered in trench. Large pieces of concrete embedded with timbers and rebar, iron beams ect... Trench is approximately 12' wide starting at station 05+20. Backfill crew working hard to keep up with trench progress. JRS Trucking off-site.

1300 Same operations continue, completed loading trucks from borrow area, loader graded off the site to provide normal drainage. Crew stockpiling soil inside work area to facilitate making backfill.

1630 Helena Fuel Supply on site at 1600, continued to encounter large debris in the trench. Crew started clearing lines, drained pumps and opened valves. Pumps and valves were covered again with concrete blankets, heat lamps were being utilized to prevent freeze up. Modern Machinery (Jeff) called to confirm 11/8 for tear down of the PC-750, I told him tentatively and I would call him again 11/6.

1730 Dug to station 05+60 feet at 34 ft bgs (low permeability ash unit at 30 ft bgs). Backfill slurry materials detected up to station 05+10. Equipment secured crew left site. Rulon picked up PDR's.

1800 Rulon secured work area and left site.

Hydro-Metrics were on site today surveying wells inside and outside of the slurry wall work area. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day Geo-Solutions.

SIGNATURE: Terry Rulon DATE: 11/3/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

QA/QC REPORT

DAILY LOG				
	DATE	11	3	06
	NO.	0	1	6
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
Shaw observed daily quality control test performed by Geo- Solutions. Observed trench soundings, checked recorded depth of trench and backfill profile to daily report, checked bentnite mixture and slump of backfill. There were no deficiencies to report, QA/QC testing performed per the QA/QC Plan.

Completion Inspections:
None

General Site Inspections: Cloudy to overcast skies, light rain in the PM. Cold, low 20's in AM, high today was 38 degrees. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. There were no unsafe acts or conditions to report.

SIGNATURE: Terry Pulver	DATE: 11/3/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	4	06
	NO.	0	1	7
	SHEET	1	OF	2

PROJECT NAME: Asarco ASDA Slurry Wall	Project Number # 123157
FIELD ACTIVITY SUBJECT: Mix Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Safety discussion was in regard to mobile equipment.

0800 Daily operations underway, equipment up and running, warmer temperatures overnight, equipment not freezing up overnight. Rulon performed real time air monitoring for dust with PDR's up wind and down wind of the work area. Crew continued trenching for slurry wall at station 05+70, making slurry and mixing backfill.

1100 Completed trench along side "C" rounded corner to side "D". Continue to encounter large debris, concrete and steel. Trench approximately 12' wide starting at station 05+20 running to 05+60. Started building a 2" foot high soil berm around the inside of the trench alignment (North, East and South) sides, to contain non-suitable materials and mud from trench excavation.

1300 Crew continues stockpiling soil inside work area to facilitate making backfill.

1630 Crew clearing lines, drain pumps and open valves to prevent freeze up. Temperatures overnight are not expected to be below freezing through 11/10/06.

1730 Dug to station 06+70 feet at 34 ft bgs (low permeability ash unit at 30.5 ft bgs). Backfill slurry materials detected at station 06+50, 34 feet deep. Equipment secured crew left site. Rulon picked up PDR's.

1800 Rulon secured work area and left site.

There were no visitors to site today, personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day Geo-Solutions.

SIGNATURE: Terry Rulon DATE: 11/4/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	11	4	06
	NO.	0	1	7
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None.

Completion Inspections:
None

General Site Inspections: Warmer, 42 degrees in AM, high today was 54 degrees winds from the North/West at 5-10 mph. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. There were no unsafe acts or conditions to report.

SIGNATURE:	DATE: 11/4/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	5	06
	NO.	0	1	8
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Mix Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Safety topic today was project, cardinal safety rules.

0800 Daily operations underway, equipment up and running, warmer temperatures overnight, equipment not freezing up overnight. Rulon performed real time air monitoring for dust with PDR's up wind and down wind of the work area. Crew continued trenching for slurry wall at station 06+70, making slurry and mixing backfill.

1100 Trenching along side "D" large debris no longer being encountered. Trench approximate 3' feet' wide again. Continued building a 2" foot high soil berm around the inside of the trench alignment (North, East and South) sides, to contain non-suitable materials and mud from trench excavation. Approximately 3000 cubic yards of spoils will be left within the footprint of the slurry wall upon completion. Material can be covered with poly sheeting when it freezes or dries out enough to walk on.

1300 Crew stockpiling trench spoils inside the work area (North/ East Side) to make room for trenching and backfill operations.

1430 Crew secured equipment and materials and left site. 320 trac-hoe out of fuel, Helena Fuel Supply scheduled to be on site first thing 11/6/06. Temperatures overnight are not expected to be below freezing. Rulon secured work area and off site.

There were no visitors to site today, personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day Geo-Solutions.

SIGNATURE: Terry Rulon DATE: 11/5/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	11	5	06
	NO.	0	1	8
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
None.

Completion Inspections:
None

General Site Inspections: Warm, 48 degrees in AM, high today was 60 degrees winds from the North/West at 5-15 mph. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. There were no unsafe acts or conditions to report.

SIGNATURE:	DATE: 11/5/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	6	06
	NO.	0	1	9
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Mix Backfill and Slurry Wall Installation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Safety topic today was the "buddy system". Helena Fuel Supply on site for fuel.

0800 Daily operations underway. Crew continued trenching along side "D" for slurry wall at station 07+10, making slurry and mixing backfill. Completed screening soil for back fill, have enough suitable material for back fill. Pulled Reed screen out of area, started dry decon.

1100 Same operations continue, took screen over to wash bay for final decon, called Helena Sand and Gravel and called it off rent. Frac tank approximately ¼ full of slurry, will have enough to finish.

1300 Called Modern Machinery (Jeff) to confirm 11/8 for taking down the PC-750, loaded up generator and torpedo heater, took back to EH Rentals. Will keep the compressor and weed burner through tomorrow. Personal air sampling pumps and Gilibrator sent back to Findlay, Ohio.

1630 Dug to station 07+90, finished pumping remaining slurry into trench. Crew cleared lines and drained pumps for the mixing station, frac tank opened up to vent prior to entry for cleaning on 11/7/06. Secured equipment and materials and left site.

1730 Rulon secured work area and left site.

B. Cox (Asarco) visited the site to check on progress, I talked to him regarding left over bentnite, which will be stored inside of the Feed building/field office until required for future use, his said that would be fine. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day Geo-Solutions.

SIGNATURE: [signature] DATE: 11/6/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	11	6	06
	NO.	0	1	9
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:
Shaw performed a follow-up inspection to ensure daily test are within specifications and meet the requirements of the Work Plan and QA/QC Plan. There were no conformance issues to report.

Completion Inspections:
None

General Site Inspections: Warm, 48 degrees in AM, high today was 60 degrees winds from the North/West at 5-15 mph. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. There were no unsafe acts or conditions to report.

SIGNATURE:	DATE: 11/06/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	7	06
	NO.	0	2	0
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

FIELD ACTIVITY SUBJECT: Mix Backfill and Slurry Wall Installation

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Safety topic today was the "Fall Protection".

0800 Daily operations underway. PC-750 at end of trench, clearing out debris as trench is backfilled and bailing slurry from trench. Crew continued cleaning up, taking down mixing plant. Rulon performed air monitoring for confined space entry into Frac tank for cleaning. Backfill crew is at station 07+90.

1100 Goodwin Pumps delivered a pump for pumping slurry from trench. Started deconning PC-750, removing loose soil and debris inside of EZ. Crew cleaning out Frac tank, washing hoses and other equipment from mixing plant.

1300 Called Goodwin Pumps, pump not working. Returned weed burner and air compressor to East Helena Rental. Sent PDR-1000's back to Shaw (Ohio).

1630 Unable to get pump working, sent back, Dean (Goodwin Pump) said there would be no charge for the pump but would have to charge for delivery. Crew continue deconning PC-750 and topped out the trench with backfill at station 08+20. Completed cleaning Frac tank and other equipment from mixing plant.

1700 Crew secured equipment and materials, left site.

1800 Rulon secured work area and left site.

B. Cox, J. Nickel (Asarco) visited the site to check on progress, I talked to them regarding a finale walk through of the site and completion inspection, scheduled tentatively for 11/9/06 afternoon. Also discussed covering the excess slurry and soils inside the slurry wall foot print, material will not need to be covered until it is frozen or dry enough to walk on. Solidifying the excess materials is not in the current scope of work. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day Geo-Solutions.

SIGNATURE: Timothy Rulon | DATE: 11/7/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	11	7	06
	NO.	0	2	0
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:

Completion Inspections:
None

General Site Inspections: Warm, low 50's to upper 60's winds 15 to 20 from the West. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. There were no unsafe acts or conditions to report.

SIGNATURE:	DATE: 11/7/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	8	06
	NO.	0	2	1
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Decon Equipment, Site Clean-up	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Safety topic today was "Shift Work".

0800 Daily operations underway. Crew completed deconning the PC-750, clean up continued, 950 loader and 320 excavator mixing mud with non-suitable spoil left from trench installation. Sent muliti-gas detector back to Shaw (Ohio).

1100 Modern Machinery on site to take down the PC-750, crew working on berms around the slurry wall excavation, spreading mud out to facilitate drying and deconning mixing plant.

1300 Started deconning the 950 loader inside the EZ. Shoveling and scraping lose soil, mud and debris from the body. Removed soil from the road in front of Feed building/field office and placed inside of the EZ. Put fence and hay bales back in place. Modern Machinery completed taking down the PC-750, ready to transport off site.

1630 Same operations continued, nothing unusual to report.

1700 Crew secured equipment and materials, left site.

1800 Rulon secured work area and left site.

J. Nickel (Asarco) visited the site to check on progress, finale walk through of the site and completion inspection, scheduled for 11/9/06 afternoon, no other issues to report. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day Geo-Solutions.

SIGNATURE: Brenda Rulon	DATE: 11/8/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	11	8	06
	NO.	0	2	1
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:

Completion Inspections:
None

General Site Inspections: Cold, low 30's to upper 40's winds 15 to 20 from the North/West. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. There were no unsafe acts or conditions to report.

SIGNATURE: [signature]	DATE: 11/8/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	9	06
	NO.	0	2	2
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Decon Equipment, Site Restoration	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Daily operations underway. Crew continued deconning heavy equipment, hand tools, hoses ect...

1300 Crew cleaning out and packing up field office, deconning LVE. Geo-Solutions de-mobilizedequipment and personnel from site.

1500 Same operations continued B. Miller and J. Nickel on site for final walk through inspection, issues discussed with Shaw were in regard to monitoring wells within the foot print of the slurry wall general site clean-up and silt fence around the borrow area.

- Mud and debris around four monitoring wells are to be dug out so Asarco can inspect the wells.
- Construction generated waste will be disposed of in the roll-off container designated by Asarco.
- The silt fence installed around the borrow area will be tightened up.

1700 Crew dug out two of the four wells, secured equipment and materials, left site.

1800 Rulon secured work area and left site.

B. Miller and J. Nickel (Asarco) visited the site to perform a finale walk through of the site and completion inspection. Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO, R. Cattles-EO, K. Richardson-EO/Laborer, M. Swickard-EO (Shaw), and Steve Day Geo-Solutions.

SIGNATURE: Terry Rulon	DATE: 11/9/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

QA/QC REPORT

DAILY LOG				
	DATE	11	9	06
	NO.	0	2	2
	SHEET	2	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:

Completion Inspections:
Performed finale site walk through with Asarco, punch list issues will be resolved and a re-inspection performed on 11/10/06.

General Site Inspections: Cold, mid 30's to upper 40's winds 10 to 15 from the North/West. There were no changes from plans or specifications, work performed in accordance with the approved Work Plan and QA/QC Plan. There were no unsafe acts or conditions to report.

SIGNATURE: [signature]	DATE: 11/9/06

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FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	10	06
	NO.	0	2	3
	SHEET	1	OF	2

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157
FIELD ACTIVITY SUBJECT: Decon Equipment, Site Restoration Demobilize Personnel and Equipment.	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 Crew onsite, held tailgate safety meeting, discussed JSA's, daily operations and potential hazards. Daily operations underway. Crew continued deconning heavy equipment, hand tools, hoses ect...Cattles, Swickard and Richardson demobilized from site. Directed by R. Morgan, not to demobilize the 320 excavator or the 930 loader.

1300 Completed work on the final walk through items, discussed with J. Nickel, he said one of the four monitoring wells was impacted by the slurry wall installation, will make note on the completion inspection. MP&E picked up the 950 loader. Crew completed deconning LVE, started to pack up tools to send back to Shaw in Ohio.

1500 Helena trailer sales picked up the field office, continue packing up left over PPE and supplies. Left over PPE will be stored in the Feed building with sand bags, pallets and bentnite.

1730 Crew secured equipment and materials, left site. Bloss and Kilker to demobilize 11/11/06. Rulon Scheduled to meet surveyors

1800 Rulon secured work area and left site. Field work completed.

Personnel on site, T. Rulon-CM, D. Bloss-EO, D. Kilker-EO

SIGNATURE: Terry Rulon DATE: 11/10/06

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FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	11	10	06
	NO.	0	2	3
	SHEET	2	OF	2

QA/QC REPORT

PROJECT NAME: **Asarco ASDA Slurry Wall**	Project Number # 123157

DESCRIPTION OF INSPECTIONS

Preparatory Inspections:
None

Initial Inspections:
None

Follow-up Inspections:

Completion Inspections:
None

General Site Inspections: No change in site conditions.

SIGNATURE:	DATE: 11/10/06

HYDROGEL®

For use in drilling operations where premium grade Wyoming Bentonite is desired. HYDROGEL® is a preferred product for use in oil and gas exploration drilling. It is also used in slurry trenching, caisson boring, and cast-in-place concrete foundations.

PRODUCT CHARACERISTICS:

- Manufactured to exceed API 13A, Section 9 specifications.
- 200 mesh viscosity builder.
- Yields excellent fluid loss characteristics.
- Assists in stabilizing the bore hole or trench walls.

PRODUCT SPECIFICATIONS	A.P.I. Specifications 13-A, Sec. 9-2004	Typical Hydrogel®
Barrel Yield	--	96 ± 5
Viscometer Reading at 600 R.P.M.	30 Min.	36 ± 6
Water Loss	15.0 cc Max.	13.5 ± 1
% Thru 200 Mesh Screen	--	80 ± 4
Wet Screen Analysis Residue on U.S. Sieve No. 200	4.0% Max.	3.0 ± .5
% Moisture	10.0%	7 ± 1
pH	--	9.0 ± 1.0
Gel Strength—10 Sec.	--	4 ± 1
Gel Strength—10 Min..	--	12 ± 3
Plastic Viscosity	--	12 ± 2
Yield Point, lb/200 ft.	3 x P.V. Max.	16 ± 2

Mix 20 to 50 pounds per 100 gallons of make-up water.

This product is designed to be flushed out of the well bore prior to using the well for drinking water. Before placing a well in service for drinking water it is to be properly flushed and drained until the turbidity of the water is <1 NTU above ambient turbidity.

HYDROGEL® is available in 50 pound and 100 pound multi-walled paper bags, bulk bags, or bulk.

WYO-BEN, INC. 550 S. 24th St. West P.O. Box 1979 Billings, Montana 59103 USA
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Appendix C

Final Inspection

FINAL INSPECTION TO DO LIST
FORMER ACID PLANT SEDIMENT DRYING AREA
SLURRY WALL

November 9, 2006

Demo Super Sacks in Roll-off

Uncover 4 existing wells to gain access

NOV. 13, 2006

Groundwater monitoring wells within the construction area have been impacted by slurry wall material, with particular impact to AH-29.

Bob Miller, ASARCO JW Nickel for Bob Miller 11/13/2006

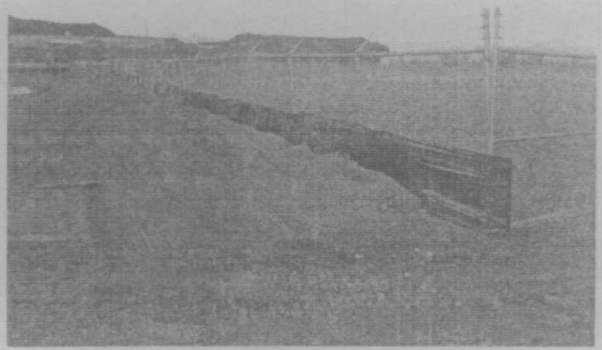
Appendix D

Photographs

FORMER ACID PLANT SEDIMENT DRYING AREA
SLURRY WALL

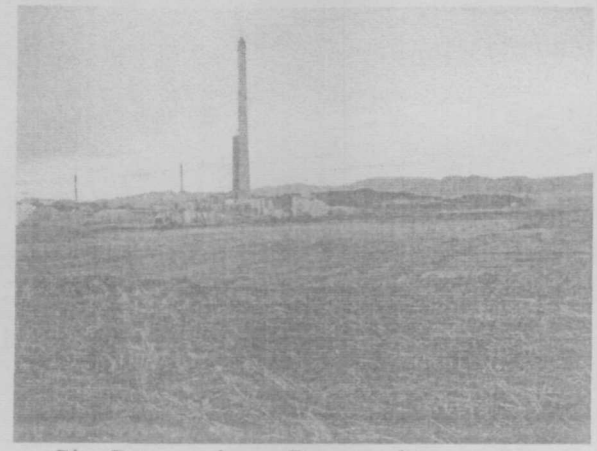
Site Preparation - Removing Asphalt and Concrete Layers
October 19, 2006

Site Preparation - Constructing Working Platform
October 21, 2006



Site Preparation – Erosion Control
October 21, 2006

FORMER ACID PLANT SEDIMENT DRYING AREA
SLURRY WALL

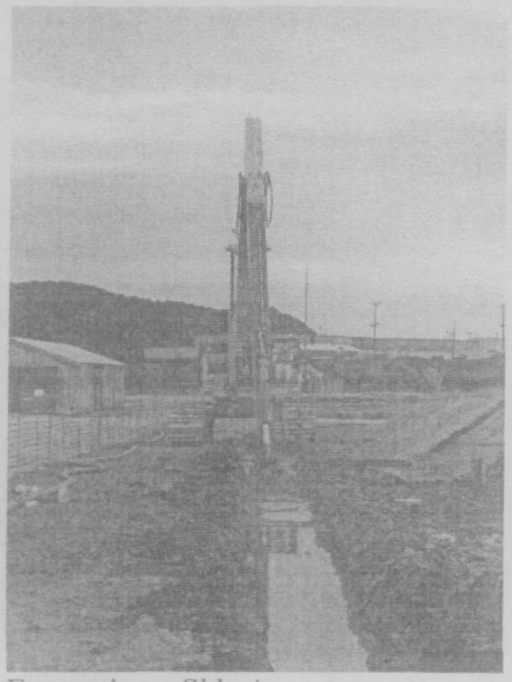


Site Preparation – Borrow Source Area
October 27, 2006

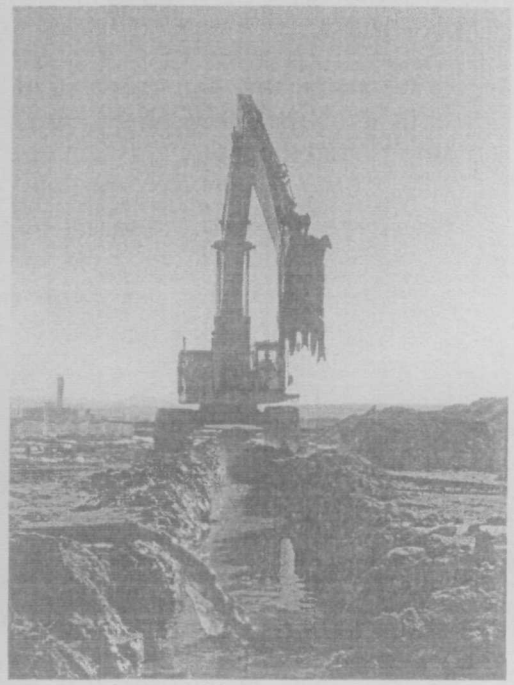
Site Preparation – Borrow Soil and Bentonite Super Sacks for Backfill
October 27, 2006

Excavation – Lead-In Trench
October 27, 2006

FORMER ACID PLANT SEDIMENT DRYING AREA
SLURRY WALL



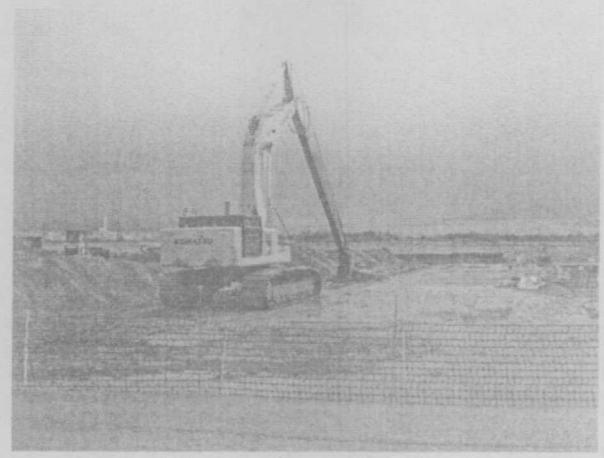
Excavation – Side A
October 28, 2006



Excavation – Side B
October 31, 2006

Excavation – Side C
November 1, 2006

FORMER ACID PLANT SEDIMENT DRYING AREA
SLURRY WALL

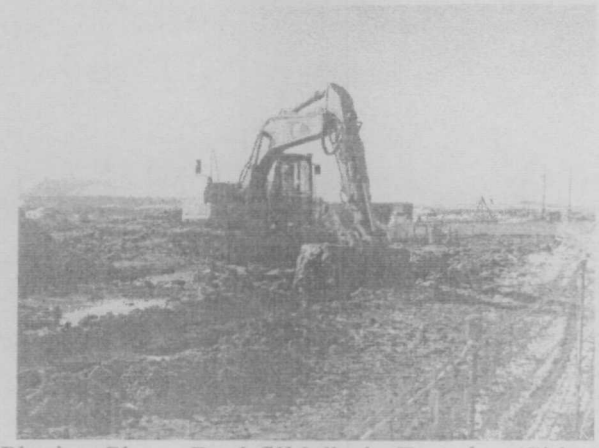


Excavation – Side D
November 5, 2006

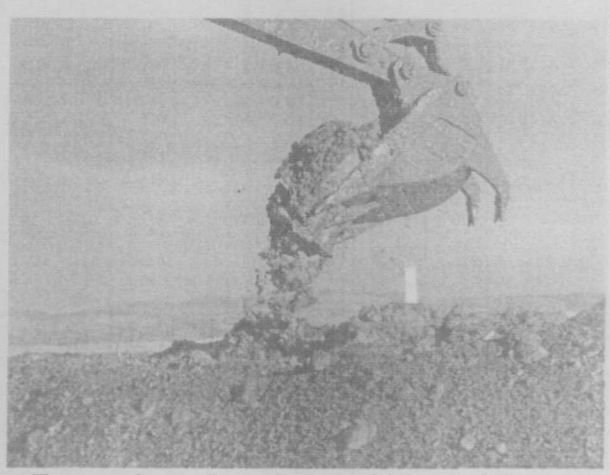
Slurry Mix Plant
October 27, 2006

Mixing Slurry Backfill
October 28, 2006

FORMER ACID PLANT SEDIMENT DRYING AREA
SLURRY WALL



Placing Slurry Backfill Mix in Trench at Side A
November 1, 2006



Excavation – Low-Permeability Ash Layer
October 28, 2006

Screening Excavated Spoils
November 1, 2006